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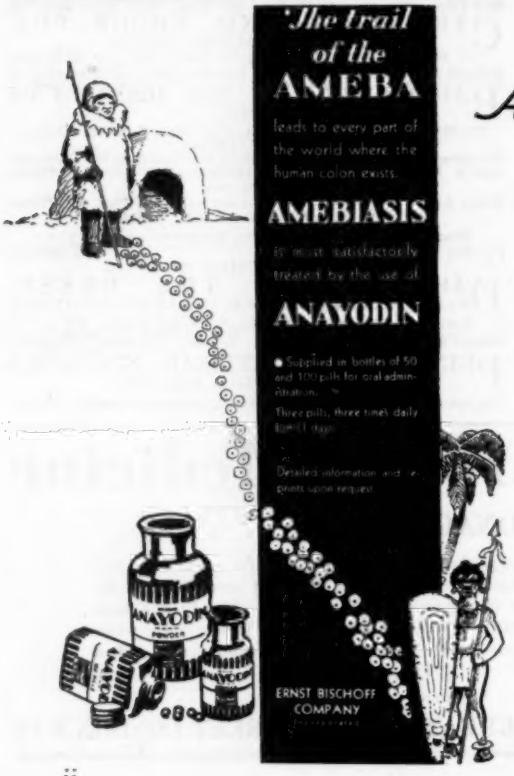
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ORIGINAL ARTICLES

MASS RADIOGRAPHY IN PRACTICE

By FREDERICK HEAF, M.D. Camb.
PRINCIPAL ASSISTANT MEDICAL OFFICER, LONDON COUNTY COUNCIL

THE object of mass radiography is to discover cases of pulmonary tuberculosis by submitting large numbers of the population to X-ray examination. It should not be considered as a means of determining the incidence of tuberculosis but as an instrument for combating the spread of infection by revealing the hidden active cases among the apparently healthy population. Indeed, as far as the general public are concerned it should be dissociated from tuberculosis and made an examination for general fitness. This would stop a person thinking that because he had passed a test for tuberculosis at one time therefore the disease could not be the explanation of symptoms which developed later.

Mass radiography to be effective must be carried out on an extensive scale. This means provision of services to deal with those whose radiogram is not normal. Judging from the literature about 1·5% of those examined will be found to be suffering from pulmonary tuberculosis, while perhaps 4% will show abnormal shadows. If only 5% of the population of London is examined a more detailed investigation will therefore have to be made in something like 10,000 cases. Re-examination will also be necessary and the number of cases discovered will not decrease for some years until a high proportion of the population between 15 and 50 have been examined.

CLASSIFICATION

It is of little use merely to tie labels on to people which will stimulate morbid fears without helping them to meet the new circumstances. A scheme must therefore be developed concurrently to deal with those found to have abnormal chests.

Mass radiology will divide those examined into people with radiograms within normal limits and those whose radiograms show significant shadows. Doubtful cases and those with peculiar shadows will have to be put aside for detailed clinical and radiographic examination. These cases may need some beds at a diagnostic centre or they may attend as outpatients a well-equipped clinic. They will certainly throw a considerable amount of extra work on chest hospitals and dispensaries.

Where the radiographic shadows are due to tuberculosis the lesions may be classified as follows :—

1. *Cases with active lesions* should be recognised at the first examination or at the second after a short interval. Most of these patients will need sanatorium routine for a period, but a small percentage will be able to receive domiciliary treatment if their environment is suitable and adequate medical supervision is available. In the minimal-lesion cases it is important that the patient receives sufficient treatment to arrest the disease without creating that shyness for work which sometimes follows the enforced idleness of a sanatorium. As soon as possible the patient should be usefully employed under medical supervision.

2. *Cases with latent lesions* are and always have been symptomless but radiographic shadows indicate pulmonary infiltration which may at any time increase or produce symptoms of activity.

3. The *early quiescent case* has had a history of symptomatic pulmonary disease with indefinite or very slight radiographic changes and at the time of examination shows no signs of activity.

Both groups 2 and 3 feel well and in their own estimation they are normal and healthy. To put them in an institution would be a psychological, medical and economic mistake, yet they are all potential cases of active pulmonary tuberculosis and need close observation. Periodic medical and radiological examinations will not prevent a breakdown in their health. It is essential to eliminate predisposing causes of tuberculosis in their life. Machinery already exists for dealing with housing and extra nourishment, but there is no satisfactory organisation for the control of leisure and the finding of suitable employment. The Ministry of Labour, operating in conjunction with the Ministry of Health on a regional basis, could give valuable help in the redistribution of those requiring special employment. Existing training centres might be used for those needing training or they might be dealt with by the national rehabilitation board which has been suggested. Whatever scheme is adopted it must not in any way cause these apparently healthy people to consider themselves invalids or substandard workers.

4. The *advanced quiescent case* has a past history of symptoms of pulmonary tuberculosis and there are definite and usually fairly extensive radiographic changes due to tuberculosis but there has been no indication of activity for a considerable period. In these people the risk of breakdown is greater and they need medical supervision and sheltered conditions of employment such as are to be found in the village settlement.

NOTIFICATION

Of the four groups into which the cases have been divided no argument against the notification of those suffering from active tuberculosis can be raised. But difficulties begin with the apparently healthy groups who are not suffering from active tuberculosis. With proper treatment it is hoped that most of them will never develop active lesions. They should therefore not be notified as cases of tuberculosis but placed on a supplementary register (as suggested by Fowler of Pinewood Sanatorium) which can be revised at the end of each year. If clinical evidence of active tuberculosis appears the name would be automatically transferred to the permanent register and the case notified. Every care would have to be taken that people on the supplementary register escaped the disadvantages of being thought to suffer from tuberculosis. The visiting of homes and investigation of financial circumstances and conditions of employment should be carried out not by the staff of the tuberculosis dispensary but by social-welfare workers, the public-assistance department or the suggested rehabilitation board.

RÔLE OF THE TUBERCULOSIS DISPENSARY

The best results from mass radiography will be obtained if the dispensary is regarded as an essential part of the scheme, ready to deal with the cases of active tuberculosis but not itself concerned with the organisation or management of the survey. Most of the people with abnormal radiograms will have no sputum or other symptoms of tuberculous activity and they need only be observed at intervals at centres not directly connected with a dispensary. These centres might either be part of the welfare schemes of large industrial firms or directly connected with a body forming a liaison between the Ministry of Labour and the Ministry of Health. All the films taken at the centre would have to be reviewed by an authority on disease of the chest with special knowledge of tuberculosis, assisted by a radiologist with similar qualifications and the tuberculosis officer of the area. Where the diagnosis is doubtful further investigations must be made at a hospital equipped for the purpose, and only when the case is confirmed as active tuberculosis should it be transferred to the care of the dispensary.

SOCIAL IMPLICATIONS

Some of the repercussions of mass radiography on life insurance and employment have already been discussed in the correspondence columns of THE LANCET.[1] Radiography is a more searching form of medical examination than those at present required for life insurance or employment carrying superannuation. What will be the position of the apparently healthy person with an abnormal chest radiogram ? To safeguard his interest the review of the films should not be left to one doctor, but be submitted to a board of three whose unanimous opinion must be obtained before insurance companies, state or municipal services or similar concerns accept

1. *Lancet*, Aug. 24, 1940, p. 246 ; Sept. 7, p. 309 ; Sept. 14, p. 343.

the diagnosis. From the statistics published 25% of those with abnormal radiograms are found to have active lesions. The abnormalities shown by the other 75% may or may not be clinically significant. Their ultimate prognosis is of importance to those concerned with assessing the probability of life.

BEDS AND FINANCE

Extra beds will be needed for people with abnormal radiograms, but every effort should be made to avoid inpatient investigations and treatment. Some patients will need sanatorium care, but there should be ample accommodation for them after the war in the beds now being used by the Emergency Medical Service. It should not be necessary to consider the suggestion made in Germany,[2] where mass radiography has been practised, of combing out the inmates of children's institutions to release beds for adults. Besides the administrative difficulty of converting institutions for children into adult accommodation the principle is bad for it would mean stopping the treatment of some children which was producing good results. A heavier demand will probably fall on beds for observation and diagnosis at the general and special hospitals, but even here much would be done by extending the facilities for investigation in the out-patient department. More staff will no doubt be required to deal with the increased number of patients.

Once the diagnosis of active tuberculosis has been established the patient comes under the tuberculosis scheme of his local authority, but till then he should be protected from the drawbacks which attend association with the disease, and investigations should if possible be carried out at the mass radiography centre or the out-patient department of a general hospital. The number of recommendations for inpatient treatment will also be limited by the reluctance of examinees, many of whom will probably feel fit and well, to accept hospital or sanatorium treatment. The public will not coöperate in a scheme which is likely to intern them in an institution.

Money will be needed to establish centres for mass radiography, apparatus will have to bought and specialist staff engaged at good salaries. The cost of maintaining the centres will not be great but the initial outlay may be considerable. Industry will receive the main benefit from the scheme in an improved general standard of health of the workers and it is reasonable to suggest that it should subscribe largely to the inauguration of the survey. Contributions from firms who are interested could be controlled by the national rehabilitation board who would be responsible for the examination of their employees. Local authorities under the Ministry of Health would take over cases needing treatment and public-assistance departments might help with training people for suitable occupations.

CONCLUSIONS

Mass radiography will assist in controlling the spread of tuberculosis. The scheme should be presented to the public as part of a general fitness campaign rather than a search for cases of tuberculosis.

An organisation for the rehabilitation of the abnormal cases discovered must be promoted. Inpatient observation and treatment must be avoided where possible and every effort made to prevent invalidism developing. Attention, therefore, should be given to the domestic environment, employment, leisure and daily routine of those whose chests show lesions which are or may be of clinical significance.

The diagnosis of chest lesions discovered by mass radiography may have far-reaching consequences, and doubtful cases should be submitted to a board of three specialists of whom the tuberculosis officer should be one.

Sufficient accommodation should be available after the war for the observation and treatment of active cases in the beds now under the E.M.S.

Investigations into domiciliary conditions and employment, training in suitable occupations, and redistribution of labour might be under the management of a national rehabilitation board forming a liaison between the Ministry of Health and the Ministry of Labour, and the main survey itself might be taken over by some such body assisted by industrial organisations. Cases needing care due to the presence of tuberculosis would be handed over to the public-health authorities for observation and treatment.

Since the main benefit of the scheme would fall to industry, industrial concerns should help financially in the inauguration and maintenance of the scheme, while the treatment and part of the rehabilitation costs might be borne by the local authorities under the Ministry of Health.

I should like to thank Dr. Allen Daley, medical officer of health of the London County Council, for permission to publish this paper. The suggestions it contains are not necessarily the policy of the council but are my own personal views.

2. Clare, K. *Lancet*, Jan 20, 1940, p. 155.

TRACTION LESIONS OF THE EXTERNAL POPLITEAL NERVE

By HARRY PLATT, M.D.Manc., M.S.Lond., F.R.C.S.
PROFESSOR OF ORTHOPÆDIC SURGERY IN THE UNIVERSITY OF MANCHESTER; ORTHOPÆDIC SURGEON TO THE ROYAL INFIRMARY

ONE of the more serious but relatively uncommon forms of violence to which the knee-joint is exposed is a sudden and powerful adduction of the leg on the thigh. The essential injury produced by this mechanism is an extensive rupture of ligamentous structures on the lateral aspect of the joint, sometimes associated with a temporary subluxation. In exceptional circumstances, when other forces, such as torsion and hyperextension, are combined with adduction, the knee-joint may be completely dislocated. Under such violence it is not surprising to find that the external popliteal nerve shares in the damage and is either overstretched or even completely torn across. Nine examples of traction lesions of the external popliteal nerve produced in this manner have come under my care during the past twenty years (see table). The circumstances in which the injuries were sustained were as follows:—

Industrial accidents	4	Sport (pheasant shooting)	1
Road traffic accidents	3	Games (rugby)	1

ILLUSTRATIVE CASE-RECORDS

CASE 2.—A man, aged 32, met with an accident while shooting pheasants on Jan. 26, 1924. He caught his right heel in the ground and fell forwards, putting a sudden powerful adduction strain on his knee-joint. Immediate examination showed an obvious rupture of the ligaments on the outer side of the knee, with angular deformity. This was promptly reduced by a medical man in the party. Some hours later, drop-foot was noted. Three days later the right tibia was abnormally movable on the femur. There was no effusion and no pain. There was a complete motor and sensory palsy of the external popliteal nerve.

Operation.—On Feb. 11 the right external popliteal nerve was explored, and it was found that the biceps had been avulsed from the head of the fibula; the lateral capsule had been ruptured close to the tibial margin; the external lateral ligament had been torn and the external popliteal nerve completely ruptured.

The proximal end of the external popliteal nerve was tapering and entangled in the avulsed tendon of the biceps. The distal stump, discovered only after a prolonged search, was closely adherent to the torn lateral capsule, almost in the middle line. From this level the distal nerve trunk ran downwards and backwards to pass under the peroneus longus. After the proximal and distal trunks had been widely freed so that the large gap could be closed, the ends were trimmed, and the nerve was sutured under moderate tension, with the knee-joint flexed to 90°. Repair of the torn capsule and external lateral ligament and reattachment of the biceps tendon to the fibula completed the operation.

Subsequent course.—The first signs of recovery of function—a recession in the area of protopathic loss and a quiver in the extensor longus digitorum muscle—appeared seven months after the repair of the nerve. Thence onwards there was steady recovery, and in November, 1925—a year and nine months after the operation—the patient, a regular Army officer, was passed as physically fit to enter the Staff College. All the muscles supplied by the external popliteal nerve were

then acting with considerable strength, and the knee-joint was stable, with a full range of mobility.

End-result.—In May, 1938—fourteen years after the operation—Dr. Geoffrey Williams, of Wrexham, who had reduced the subluxation of the knee at the time of the original accident, reported that there was a complete motor and sensory recovery, with perfect function in the knee-joint.

CASE 5.—A man, aged 29, had an accident on Dec. 21, 1930, while playing rugby football. His right knee was forcibly twisted in a tackle and completely dislocated. The dislocation was not reduced until two hours after the injury; during that time the patient experienced intolerable pain in his foot, which became swollen and dusky. A few days later, patches of gangrene appeared, involving the whole of the little toe, the under surface of the tips of all toes, and the skin under the heads of the metatarsals. A complete external-popliteal paralysis was noted from the beginning.

Six weeks later there was a fixed flexion contracture of the right knee-joint, with a complete external-popliteal lesion and a partial internal-popliteal palsy. There were gangrenous patches on the foot in the areas described above. At this time the patient was experiencing continuous and agonising pain in the foot, with extreme hyperæsthesia (causalgia).

Operation.—On Feb. 10, 1931, the right external popliteal nerve was explored and sutured end to end. The biceps tendon was unrecognisable. The nerve had been completely ruptured, the proximal end being incorporated in the remains of the biceps, and the distal end embedded in the scar at the site of the old rupture of the lateral capsule. A thin fibrous cord was traced from the proximal to the distal stump. Resection and end-to-end suture was performed, with the knee in full flexion.

Subsequent progress.—The gangrenous areas ultimately separated. The first sign of recovery of external-popliteal function was seen after seven months. At the end of a year there was brisk action in the extensor longus hallucis and extensor longus digitorum muscles, with some recovery of protopathic sensibility. An equinus deformity of the foot and flexion contracture of the knee of 30° were, however, still present.

Second operation.—Seventeen months after the nerve suture the contractures were corrected by a subcutaneous elongation of the tendo Achillis and by division of the posterior capsule of the knee and hamstring tendons.

End-result.—Seven years later the patient walks without a limp and with all external popliteal muscles acting powerfully. There appears to be full recovery of sensation, but accurate sensory tests are somewhat difficult to carry out, because the foot has remained exceedingly hypersensitive, particularly under the metatarsal heads, where the soft part covering is very thin. There is a full range of flexion and extension of the knee-joint, with complete stability.

CASE 6.—Male, age 20, caught his leg in some machinery. He was admitted to hospital in February, 1933, with a complete dislocation of the right knee, which was reduced without delay. Foot-drop was noted several days later. After-treatment: fixation of knee for four months.

Seven months after the injury there was full range of movement of the knee-joint with some lateral instability, and motor and sensory signs of complete external-popliteal lesion.

Operation.—On Sept. 22, 1933, the right external popliteal nerve was explored and sutured end to end. The biceps tendon was found to have been avulsed and the fibular styloid was lying inside the lateral compartment of knee, embedded in dense scar tissue. The external popliteal nerve was completely ruptured; its proximal end was fused with remains of the biceps tendon; its distal stump was in the outer compartment of the knee; and the nerve trunk ran downwards and backwards to the region of the neck of the fibula. The nerve was sutured end to end under moderate tension.

Subsequent course and end-result.—Three years and four months later there were signs of a complete external-popliteal lesion, motor and sensory. The patient is working as a labourer, wearing a drop-foot appliance. There is a full range of movement of the knee-joint, with slight lateral instability. There is complete failure of regeneration of the nerve.

SUMMARY OF CASE-RECORDS

Case	Nerve lesion	Knee-joint lesion	Operation on nerve	Result
1 (1921)	Nerve intact; hæmorrhagic staining of sheath	Not recorded at the time of the accident	Exploration after 5 weeks	Incomplete recovery; sensory recovery complete; motor recovery partial
2 (1924)	Complete rupture	Subluxation of knee reduced promptly; rupture of lateral capsule; external lateral ligament; avulsion of biceps	End-to-end suture after 16 days	Perfect recovery of motor and sensory functions
3 (1925)	Complete lesion; proximal neuroma connected to distal trunk by fibrous cord	Detachment of fibular styloid (fig. 1)	Resection and suture after 2 yrs. and 8 months	Complete failure
4 (1926)	Complete rupture	Rupture of lateral capsule; avulsion of fibular styloid	End-to-end suture after 3 months	Partial recovery of motor and sensory functions
5 (1931)	Complete rupture	Complete dislocation of knee-joint; avulsion of biceps; compression of popliteal artery; gangrene of toes	End-to-end suture after 6 weeks	Complete recovery
6 (1933)	Complete rupture	Complete dislocation of knee-joint; avulsion of biceps; styloid process of fibula in outer compartment of joint	End-to-end suture after 7 months	Complete failure
7 (1936)	Nerve intact; no macroscopic lesion	Rupture of lateral capsule and lateral ligament, fibular styloid	Exploration after 6 weeks	Perfect recovery
8 (1937)	Nerve intact; no macroscopic lesion	Rupture of lateral capsule and of external lateral ligament, with avulsion of fibular styloid	Exploration after 7 weeks	Complete failure
9 (1939)	Nerve intact	Rupture of lateral capsule and external lateral ligament, with avulsion of margin of tibial tuberosity and fracture of neck of fibula	Treated conservatively	Complete recovery in 4 weeks

MORBID ANATOMY

Knee-joint.—The operation and clinical findings in the series of cases here recorded show that the injuries due to adduction alone present a characteristic triad of lesions: (1) rupture of the lateral capsule close to the margin of the tibia, producing a large hiatus on the outer side of the joint; (2) avulsion of the styloid process of the fibula, carrying with it the insertion of the external lateral ligament (fig. 1); and (3) avulsion of the biceps tendon from its fibular attachment. In the two cases of complete dislocation of the knee-joint the injury to the capsule was obviously more extensive and was accompanied no doubt by rupture of the crucial ligaments.

Nerve.—The nerve lesions fall into two groups: (1) four cases of over-stretching without loss of continuity; and (2) five cases of complete anatomical rupture.

(1) *Over-stretching.*—In the three cases in which the nerve was explored—all within eight weeks of the accident—the nerve trunk was intact, with little or no naked-eye evidence of any lesion (cases 1, 7, and 8). The failure of recovery in cases 1 and 8 clearly indicates, however, that the microscopic damage to axis-cylinders must have been serious. In the one case treated conservatively (case 9), despite violence sufficient to produce a typical rupture of capsule and ligament, the nerve sustained little more than a transitory concussion.

(2) *Complete rupture.*—In the five cases of complete rupture of the nerve trunk the findings at operation enable a clear picture to be reconstructed of the sequence of events in this

uncommon type of nerve injury. It appears that the nerve trunk is usually torn across above the level of the neck of the fibula and distal to the origin of the lateral cutaneous branch. Immediately after the rupture the proximal end retracts with the avulsed biceps tendon, with which it becomes incorporated in a mass of scar tissue at a later stage. In some instances it is evident that the nerve trunk is momentarily forced into the outer compartment of the knee, as shown by the discovery of the distal stump in the scar tissue at the site of the tear in the lateral capsule in cases 2, 5, and 6 (fig. 2).

In case 6 the wedge of scar tissue projecting into the joint contained the shrunken remains of the fibular styloid. The entry of the external popliteal nerve and a bony fragment into the knee-joint is the counterpart of the much better-known injury in the region of the elbow—namely, the inclusion in the joint of the internal epicondyle accompanied on occasion by the ulnar nerve after a subluxation or dislocation. Case 3, in which the course of the nerve trunk was undisturbed, presented a familiar type of nerve lesion consisting of a proximal neuroma connected to the distal stump by a slender fibrous cord.

RESULTS OF TREATMENT

Over-stretching of nerve.—In the three cases in which the nerve was explored the operation played no part in determining the speed or quality of the recovery; for in no case was it necessary to release the nerve from the constricting or restraining effects of scar tissue. The information obtained by direct inspection of the lesion, a method which in graver types of nerve injury is often of considerable prognostic importance, in two cases proved to be misleading in this respect.

The quality of the regeneration in the three patients operated on varied widely. In all three the nerve trunk showed little or no evidence of macroscopic damage; but, whereas in one case there was complete recovery of motor and sensory functions, and in another, examined seventeen years after the operation, recovery was still incomplete, in the third the result was a total failure of regeneration. The main cause of failure lies in the degree of irreparable damage sustained by axis-cylinders in the interior of a nerve trunk which showed no alteration in calibre or consistency. Similar results are not uncommonly seen in traction injuries of the brachial plexus. In such circumstances no form of treatment, conservative or operative, can appreciably influence the ultimate degree of recovery.

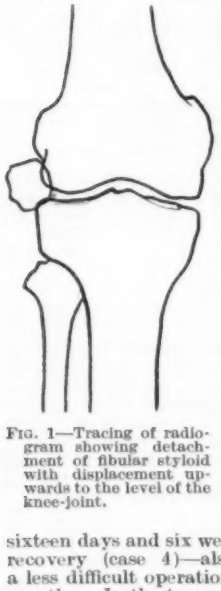

FIG. 1—Tracing of radiogram showing detachment of fibular styloid with displacement upwards to the level of the knee-joint.

Complete rupture of the nerve.—Of the five cases of nerve suture two were complete failures, one showed an incomplete recovery, and two showed complete restoration of both motor and sensory functions—one of them (case 2) being a perfect recovery. In the two cases of complete recovery, although the nerve lesion was most extensive and the nerve suture carried out under conditions of extreme difficulty, the periods of delay between the date of the accident and the operation were very short—sixteen days and six weeks. In the case showing partial recovery (case 4)—also a typical severe lesion but a less difficult operation—the period of delay was three months. In the two complete failures there were longer periods of delay—seven months in case 6, and two years and eight months in case 3, where a less severe type of lesion was repaired without special difficulty. Although here again the influence of the unknown factor—i.e., the degree of intraneural damage to axons in the proximal part of the nerve trunk—cannot be discounted, these cases illustrate the well-established fact that early repair in a complete nerve lesion is of paramount importance in determining the quality of regeneration and its consequent value in terms of motor and sensory function.

The injury to the joint.—The excellent function regained by the knee-joint is a striking feature in all the cases in the series and is particularly notable in the two cases of complete dislocation.

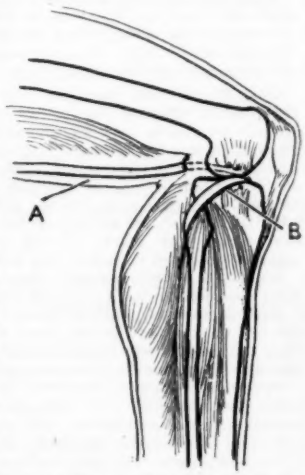

FIG. 2—Diagram of traction injury to the external popliteal nerve in adduction injury to the knee-joint (rupture of lateral capsule, external lateral ligament, and biceps tendon), showing entry of nerve into knee-joint through a gap in the lateral capsule: A, proximal end of nerve; B, distal end of nerve.

SUMMARY

In severe injuries of the knee-joint due to adduction of the leg on the thigh the external popliteal nerve is liable to be overstretched or completely torn across.

The injury to the knee-joint resulting from forcible adduction consists of rupture of the lateral capsule close to the tibial margin, avulsion of the biceps tendon, and avulsion of the external lateral ligament, carrying with it the fibular styloid. Exceptional violence may cause a complete dislocation of the knee-joint.

Cases are described illustrating the typical combination of a traction lesion of the external popliteal nerve and injury to the knee-joint. Of the nerve lesions four were examples of over-stretching without loss of continuity, and five were complete ruptures treated by end-to-end suture.

The nerve sutures performed after a delay of three months and longer gave disappointing results. In traction lesions of this type the injured nerve should therefore be explored within the first few weeks of the accident.

In exploring the graver types of complete rupture the distal part of the nerve trunk should be sought in the region of the tear in the lateral capsule.

NOTE

I have cited several cases in this series in earlier papers on peripheral-nerve injuries (*J. Bone Jt Surg.* 1928, **10**, 403; *Proc. R. Soc. Med.* 1937, **30**, 863). The present communication was read at a meeting of the Society of British Neurological Surgeons three years ago. At that time a search through the literature failed to reveal any previously recorded description of the anatomy of the "ligamentous-peroneal nerve" syndrome characteristic of adduction injuries of the knee-joint.

AMERICA has decided to increase her armed forces under a system of compulsory selection. In the last large recruitment in 1917 out of every 5 or 6 men examined medically for the army 1 was later found to be unable to serve on account of some economic or domestic difficulty. This time it is proposed that the men shall not go up for their medical examination till they have been passed by a board composed of their neighbours empowered to determine their liability for service. A hundred induction boards are being set up to carry out the medical examination, and on each there will sit an orthopædist, a general surgeon, three internists, two ophthalmologists, a clinical pathologist and a dentist. Radiograms of the chest will only be made in doubtful cases, but after the men are in camp a radiological examination of each recruit will be made.

Colonel Charles B. Spruit, medical adviser to the joint Army and Navy Selective Service Committee, who describes the arrangements in two recent issues of the *J.A.M.A.* (Sept. 18, 1940, p. 1105, Oct. 5, p. 1201), points out that as the men are being called to military services at personal sacrifice members of the boards should be willing to serve voluntarily, and it is unlikely that compensation will be offered to them.

PNEUMOCOCCAL MENINGITIS SINCE THE INTRODUCTION OF M. & B. 693

By F. H. Coleman, M.B. Camb., M.R.C.P.
SQUADRON LEADER, R.A.F.V.R.

I have summarised in tabular form most of the published cases of pneumococcal meningitis treated with sulphapyridine, and I report 2 of mine.

The sodium salt of the drug, available for intramuscular or for intravenous injection, is particularly useful in these cases, where oral administration often presents great difficulty. There were 9 fatal cases in the series of 27, including the 3 oldest and 3 of the 4 youngest patients. Of the 3 infants who died 2 had a primary focus of infection in the chest, and 1 in the nasopharynx. The duration of the symptoms before the start of treatment might have been expected to affect the outcome, but those patients with the longest histories, except case 12, survived and did remarkably well. On the other hand, case 15, with a twelve-hours' history, died soon after admission. This was evidently an instance of the fulminating type, and autopsy revealed tenacious mucus in the bronchi and congestion of the bases of the lungs besides generalised lymphatic hyperplasia.

The time required for the cerebrospinal fluid (C.S.F.) to become sterile varied considerably, but in 13 of the cases it was four days or less. A sterile culture was followed ultimately by death in only 1 case. In most of the cases which had relapses pneumococci were again cultured from the C.S.F. during the relapse. The time taken to effect a clinical cure was again variable but averaged about seven days. Evidence of a primary focus of infection was found in 13 patients, and of these 5 died, giving much the same case-mortality as for the whole series.

The aim of treatment is to maintain an adequate concentration of M. & B. 693 in the C.S.F., and it must be remembered that frequent withdrawals of fluid by lumbar puncture cannot help to maintain that steady concentration. Some patients require frequent lumbar punctures for the relief of urgent symptoms, but others do not and seem to do just as well without them. The dose of M. & B. 693 varied immensely, ranging from 12 g. in five days, which proved adequate for a man aged twenty-eight, to 155 g. in twenty-eight days, given to a man aged thirty-four who had a relapse on the fifteenth day after 80 g. had already been given. The drug was given intrathecally in case 19, and the injection was immediately followed by a violent reaction and by retention of urine; in spite of a concentration of 18 mg. of M. & B. 693 per 100 c.cm. of C.S.F. the culture remained positive, and the patient eventually died. Remarkably few toxic effects were observed in the series, slight cyanosis and nausea being the commonest; hæmaturia was reported in 1 case.

Among remedies used besides M. & B. 693 sulphanilamide was the commonest, usually being given before the result of the C.S.F. culture was known. Antipneumococcal serum was used in 5 cases which were not responding satisfactorily to chemotherapy alone. There is no clear evidence that the use of serum materially affected the course of the illness; 2 of the 5 patients receiving it died. Of the 9 fatal cases in the series 4 patients developed their meningeal symptoms either during or after a course of M. & B. 693 given for a pre-existing affection of the chest.

SENSITIVITY AND TOLERANCE OF PNEUMOCOCCI

The work of Maclean et al. (1939) has shown that pneumococci vary enormously in their sensitivity to M. & B. 693, the variation depending not on the type of the pneumococcus but on the individual strain. They have also shown that, in infected animals treated with the drug, pneumococci can readily establish a tolerance. This finding has been corroborated by Ross (1939), who obtained two cultures from a fatal case of pneumococcal meningitis treated with M. & B. 693, one shortly after the start of treatment and one post mortem. The first culture proved sensitive to M. & B. 693, whereas the second was insensitive, both strains being of much the same virulence. This would explain the fate of case 20, in whom the course was spread over a long period with a seven-day gap in the middle. In case 24 Dr. R. J. Pulvertaft carried out in-vitro experiments with the causal organism, which he found resistant to Prontosil, Proseptasine, and M. & B. 693. Whitby (1938) pointed out that the obvious defence for bacteria against drugs of this type would be the quick evolution of insensitive types, and he thought that this explained why all these drugs exerted their maximal effect on acute and not on chronic infections. As McIntosh and Whitby (1939) have shown, these drugs do nothing to increase the immunity of the body but merely have a bacteriostatic action. M. & B. 693 is rapidly excreted; hence, once the administration has been stopped, there is no longer any ban on the rapid multiplication of any organisms which have survived. They have also shown that the initial dose of the drug is not instantly active, the bacteria continuing to multiply at the same speed for the next two hours, as they would in its absence; the restraining action is not apparent before the lapse of six hours. This does not mean that the drug should be withheld in the fulminating type of case; on the contrary, there is always a chance that the patient will survive sufficiently long for the drug to take effect. The question is rather whether specific serum should be administered also, to tide over the emergency until the M. & B. 693 begins to be effective.

Case 19 is mysterious; although the illness was rather resistant to treatment from the start, a sterile culture was obtained on the twelfth day. Up to that time the patient had made steady progress, although the temperature had not fallen and a violent reaction had followed the intrathecal administration of M. & B. 693. There was no gap in the treatment, but four days later the C.S.F. again contained pneumococci, and after an indecisive phase steady deterioration followed in spite of persistent chemotherapy with M. & B. 693 and allied drugs, specific serum, and protein shock. The patient eventually died on the fiftieth day.

CASE-RECORDS

Case 1.—On Jan. 22 at 11.30 P.M. an airman, aged 18, was admitted to an R.A.F. hospital in the midst of an influenza epidemic. He is said to have presented on admission the typical picture of a fairly severe case of influenza. He gave a week's history of sore-throat and cough, both improving, and six hours' history of feeling hot, dizzy, and generally unwell. He complained of frontal and occipital headache, and during the first night he vomited five times.

At that time we were admitting only severe influenza cases, many with affections of the chest, to that particular ward; so he was immediately given the routine treatment: M. & B. 693 2 g. followed by 1 g. four-hourly. His temperature on admission was 102° F., pulse-rate 100, respiration-rate 28.

On the 23rd, after a restless night, temperature was 103° F., pulse-rate 82, respiration-rate 28. He looked seedy and was complaining of severe frontal headache. His throat was generally injected, and there were many crepitations and rhonchi at the base of the right lung. Asked to sit up in bed he seemed unable to flex his back fully; this suggested a meningeal origin of his symptoms. He had a slight nystagmus on looking to the right, absent knee-jerks, and slight stiffness of cervical muscles; Kernig's sign was negative.

At 7 P.M. the same evening the picture was far more typical of meningitis. He was lying on his side and resented being disturbed, photophobia was present, and his neck had become much more rigid; Kernig's sign was positive, and the stiffness of the back was even more noticeable than in the morning; apart from slight diplopia and the nystagmus, there were no other abnormal neurological signs. He was still having 1 g. of M. & B. 693 four-hourly.

On the 24th temperature, pulse, and respiration were normal, though the patient seemed drowsier and generally worse. Lumbar puncture released a turbid fluid under increased pressure; a cell count showed 3600 cells per c.mm., of which 92% were polymorphs; chlorides had fallen to 700 mg. per 100 c.cm., and no organisms were seen in the direct smear; pneumococci were grown on culture.

On the 25th he was brighter and took an interest in his food and surroundings; temperature still normal. The dosage of M. & B. 693 was maintained: after 7 g. on Jan. 23 he received 6 g. daily up to Jan. 28, then 3 g. on Jan. 29, 2 g. on Jan. 30, and 1·5 g. on the next two days, after which it was stopped, a total of 25 g. having been given in ten days. On Jan. 26

TABLE SHOWING PUBLISHED CASES OF PNEUMOCOCCAL MENINGITIS TREATED WITH SULPHAPYRIDINE

Case	Age and sex	Duration of symptoms before treatment with M. & B. 693	Lumbar punctures	First signs of clinical improvement	Temperature falls to normal	C.S.F. became sterile	Patient cured clinically	Cell count in C.S.F.	Dose of M. & B. 693	Other remedies used	Relapses	Primary focus of infection	Toxic effects of M. & B. 693
1	7 F	6 days	5	48 hours	12 hours	3 days	10 days	Numerous	22·5 g. in 10 days	Nil	Nil	Nil	Cyanosis 3rd day
2	14 M	3 ,,	6	Almost at once	24 ,,	1 day	48 hours	?	Not recorded but upwards of 40 g.	40 c.cm. Soluseptasine. 40,000 units antipneumococcalserum, types i–ii	4th day	,,	Hæmaturia 3rd–5th day
3	47 F	2 ,,	5	24 hours	2–3 weeks (sinusitis)	Before M. & B. 693 started	7 days	1360	50 g. in 7½ days	Sulphanilamide 15 g.	Nil	? sinusitis	Nausea and cyanosis 2nd day
4	10 F	42 hours	6	12 ,,	24 hours	Always	5 ,,	600	14·5 g. in 36 hours	Myringotomy	,,	Acute otitis media	Nil
5	1¾ M	Few hours	10	12 ,,	3 days	6 days	24 ,,	Very numerous	28·5 g. in 25 days	0·96 g. Septolix intrathecally	,,	Pneumonia R.U.L.	,,
6	39 M	24 hours	4	24 ,,	48 hours	4 ,,	12 ,,	?	40 g. (approx.) in 10 days	Soluseptasine 70 c.cm. 10% solution, Paracentesis	9th–11th day (pyrexia only)	Acute otitis media	,,
7	24 M	60 ,,	4	36 ,,	36 ,,	36 hours	8 ,,	2960	25·5 g. in 7 days	Nil	Nil	Nil	Muzzy feeling in head
8	15 M	Few hours	15	4 days	3 days	48 ,,	9 ,,	3266	52 g. in 14 days	,,	,,	Acute mastoiditis	Nil
9	35 F	48 hours	16+	5 ,,	7 ,,	3 days	40 ,,	?	135 g. in 51 days (40 g. in 6 days, gap for 26 days, 95 g. in 19 days)	120 c.cm. antimeningococcal + 300 c.cm. antipneumococcal serum	33rd day	Mastoiditis	Erythematous skin eruption and vomiting
10	14 F	4 days	17	48 hours	6 ,,	14 ,,	7 ,,	?	Not recorded	41 c.cm. complement. 36 c.cm. type xx rabbit serum	Nil	Nil	Nil
11	28 M	7 ,,	3	48 ,,	3 ,,	4 ,,	3 ,,	5000	12 g. in 5 days	Sulphanilamide 6 g.	,,	,,	Cyanosis
12	59 M	5 ,,	1	Nil	—	—	Died	5400	4 g. in 24 hours	Nil	—	,,	Nil
13	30 M	3 ,,	2	?	?	?	7 days	14,000	40 g. in 10 days, 30 g. 14th–24th day	,,	14th day	,,	,,
14	53 F	2 ,,	1	Nil	—	—	Died	?	11 g. in 40 hours	,,	—	? right ear	,,
15	6 M	12 hours	1	,,	—	—	Died after 2½ hours	Numerous	1 g. in 2½ hours	,,	—	Nil	,,
16	2½ M	Already receiving M. & B. 693	1	,,	—	—	Died	860	14 g., 8·5 g. before meningitis	,,	—	Pneumonia	,,

a second lumbar puncture released a perfectly clear sterile fluid not under increased pressure. The knee-jerks returned on Feb. 3, and by the 10th the patient was getting up and reading three novels a day without any sign of a headache.

CASE 2.—At 10 P.M. on July 17 an airman, aged 27, was admitted to the same hospital with a 24-hour history of shivering attacks, severe occipital headache, and pains in the back of the neck, arms, and calves. He had felt worse on the day of admission and had vomited on the way to hospital.

On admission he looked extremely ill, was crying out with the pain in his head, and was semi-delirious; temperature 102° F., pulse-rate 82. Photophobia intense, cervical rigidity extreme, Kernig's sign strongly positive. Immediate lumbar puncture released a cloudy fluid under greatly increased pressure, with a cell count of 8200, nearly all polymorphs. Pneumococci were numerous in the direct smear and grown on culture. A course of M. & B. 693 was started at once, 2 g. two-hourly being given for the first three doses, then 1 g. four-hourly. Within twenty-four hours there was a slight, and within forty-eight hours a decided, improvement, the headache being far easier and the cervical rigidity less.

On the fifth day all symptoms had departed, and to all appearances the patient was perfectly well, though a faintly positive Kernig's sign was still obtainable; another lumbar puncture on that day released a clear fluid, under normal pressure, which was sterile, the cell count having fallen to 25; in a direct smear of the deposit only a few lymphocytes could be seen. The administration of M. & B. 693 was continued in diminishing doses up to July 26, when it was stopped, 40 g. having been given in nine days. Progress has since been rapid and uneventful, and there are no complications.

The interest in case 1 lies in the short time that elapsed between the onset of symptoms and the beginning of treatment (about seven hours), though this was

PUBLISHED CASES OF PNEUMOCOCCAL MENINGITIS TREATED WITH SULPHAPYRIDINE—(*continued*)

Case	Age and sex	Duration of symptoms before treatment with M. & B. 693	Lumbar punctures	First signs of clinical improvement	Temperature falls to normal	C.S.F. became sterile	Patient cured clinically	Cell count in C.S.F.	Dose of M. & B. 693	Other remedies used	Relapses	Primary focus of infection	Toxic effects of M. & B. 693
17	34 M	3 days	27	48 hours	3 days	14 days	5 days	61	80 g. in first 14 days, 75 g. 15th–28th day	Nil	15th day	Nil	Nil
18	63 M	4 ,,	1	24 ,,	Never	Never	Died in 2 days	275	10 g. in 2 days	40 c.cm. of 40 R.P.	—	,,	,,
19	43 F	3 ,,	40	3–4 days	,,	12 days	Died on 50th day	660	114 g. in 32 days	62 g. sulphanilamide. 1360 c.cm. antipneumococcal serum. Protein shock on two occasions	15th day, proved fatal on 50th day	,,	(1) Cyanosis (2) Retention of urine
20	1½ F	During treatment with M. & B. 693	1	Nil	—	—	Died	Abundant	29 g. (15 g. in 15 days, gap of 7 days, 14 g. in 14 days)	Sulphanilamide 4 g.	—	Empyema	Nil
21	Adult M	Occurred after 24 g. of M. & B. 693	0	,,	—	—	,,	—	24 g. in 9 days prior to development of meningitis	Nil	—	Pneumonia	,,
22	9 M	6 days	4	3 days	24 hours	4 days	3 days	300	24·5g. in 8 days, 16 g. from 10th–20th day	Transfusion. 350c.cm. blood Drainage of right frontal sinus	10th day	Frontal sinus	,,
23	7 F	3 ,,	3	4 ,,	48 ,,	8 ,,	7 ,,	?	9·33 g. M. & B. soluble intramuscularly, +6·75g. orally in 9 days	Nil	Nil	Nil	Sterile abscess at site of injection
24	1½ M	During treatment with M. & B. 693	12	Nil	—	—	Died	1000	12·5 g. in 8 days	80,000 units antipneumococcal serum, type iv	—	Pneumococcal infection of nasopharynx	Nil
25	23 M	24 hours	12	48 hours	48 hours	4 days	10 days	10,000	1 g. M. & B. soluble, 36 g. by mouth in 6 days	Nil	Nil	Nil	,,
26	38 M	5 days	9	48 ,,	48 ,,	4 ,,	12 ,,	624	27 g. in 4 days	,,	,,	,,	,,
27	41 F	48 hours	3	24 ,,	3 days	24 hours	3 ,,	Numerous	27·75 g. in 9 days (4·25 g. by intramuscular injection)	,,	,,	Chronic suppurative ethmoiditis	Cyanosis 4th day. Erythema 9th day

AUTHOR REPORTING CASE

1. Reid (1938).
2. Robertson, K. (1938).
3. Cunningham (1938).
4. Hughes (1939).
5. Caussade et al. (1939).
6. Robinson (1939).
7. McAlpine and Thomas (1939).
8. Yule (1939).
9. Morhange (1939).
10. Cutts et al. (1939).
11–15. MacKeith and Oppenheimer (1939).
16. May (1939).
17. Raman (1939).
18. Celice and Soalhat (1939).
19. Bertrand-Fontaine and Schneider (1939).
20. Aitchison (1939).
21. Dowds (1939).
22. Dunlop and Laurie (1939).
23. Cable (1939).
24. Court (1939).
25. Robertson, F. J. (1939).
26. Holmes (1939).
27. Moulonguet and Lemoyne (1939).

due to good luck rather than to good judgment and resulted from the routine prevailing in that ward at the time. It may have been because treatment had already been begun that the course was atypical for the first twenty-four hours, and early treatment may have been responsible for the rapid and steady progress. The white blood-count showed no leucocytosis at any time; in fact there was a tendency to leucopenia: on Jan. 24, when the patient was at his worst, the white count was 6400, of which 77% were granular. On Jan. 26 it was 5000, with 72% granular, and daily counts for the next week gave figures varying between these two, always with a normal percentage of granular cells, thus making it unlikely that the M. & B. 693 had anything to do with the matter. In case 2 the maximal leucocytosis was 11,800, although the infection seemed to be of great virulence judged on clinical grounds and on the findings in the C.S.F.

CONCLUSIONS

(1) M. & B. 693 has reduced the case-mortality of pneumococcal meningitis from close on 100% to about 35%.

(2) To be effective, M. & B. 693 must be given in large doses at the outset; at least 6 g. a day should be given to an adult for the first four or five days, after which the dose can gradually be decreased.

(3) There is no reliable clinical evidence that antipneumococcal serum is of any value in a straightforward case.

(4) Frequent lumbar puncture should be avoided, except where it is indicated for the relief of the patient.

(5) M. & B. 693 should be continued in decreasing doses for at least a week after the temperature has returned to normal.

(6) A patient who is going to recover will nearly always show some signs of clinical improvement within the first three or four days; and, if improvement is noticed at all, the patient almost always makes a complete recovery in the end.

(7) Provided that dosage has been adequate, cases proving resistant to treatment are due either to a strain of pneumococci insensitive to M. & B. 693, or to a strain which has become tolerant to the drug.

My thanks are due to Group-Captain J. J. Conybeare for helpful criticism and advice.

REFERENCES

Aitchison, J. D. (1939) *Lancet*, **1**, 1436.
Bertrand-Fontaine, Mme. and Schneider, J. (1939) *Bull. Soc. méd. Hôp. Paris*, **55**, 932.
Cable, J. V. (1939) *Lancet*, **2**, 73.
Caussade, L., Neimann, N., Thomas, C. and Kyriacopoulos (1939) *Rev. méd. Est.* **67**, 153.
Celice, J. and Soalhat, J. (1939) *Bull. Soc. méd. Hôp. Paris*, **55**, 921.
Court, D. (1939) *Proc. R. Soc. Med.* **32**, 1206.
Cunningham, A. A. (1938) *Lancet*, **2**, 1114.
Cutts, M., Gregory, K. K. and West, E. J. (1939) *J. Amer. med. Ass.* **112**, 1456.
Dowds, J. H. (1939) *Lancet*, **1**, 1436.
Dunlop, H. and Laurie, J. (1939) *Ibid*, p. 1437.
Holmes, J. G. (1939) *Brit. med. J.* **2**, 995.
Hughes, M. H. (1939) *Ibid*, **1**, 214.
McAlpine, D. and Thomas, G. C. (1939) *Lancet*, **1**, 754.
McIntosh, J., and Whitby, L. E. H. (1939) *Ibid*, p. 431.
MacKeith, R. C. and Oppenheimer, G. (1939) *Ibid*, p. 1099.
Maclean, I. H., Rogers, K. B. and Fleming, A. (1939) *Ibid*, p. 562.
May, K. (1939) *Ibid*, **1**, 1100.
Morhange, J. (1939) *Ann. Oto-laryng.* May, p. 480.
Moulonguet, A. and Lemoyne, J. (1939) *Ibid*, p. 497.
Raman, P. S. (1939) *Lancet*, **1**, 1101.
Reid, G. C. K. (1938) *Ibid*, **2**, 619.
Robertson, F. J. (1939) *Brit. med. J.* **2**, 995.
Robertson, K. (1938) *Lancet*, **2**, 728.
Robinson, H. E. (1939) *Med. J. Aust.* **1**, 433.
Ross, R. W. (1939) *Lancet*, **1**, 1207.
Whitby, L. (1938) *Ibid*, **2**, 1095.
Yule, A. P. (1939) *Brit. med. J.* **1**, 872.

BLOOD-UREA AND PLASMA CHLORIDE IN EXPERIMENTAL HÆMORRHAGE

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IN the investigation of the functional pathology of hæmatemesis and melæna (Black 1939, Black and Leese 1940) the questions arose to what extent the rise of blood-urea could be attributed to hæmorrhage per se, and to what extent other factors, such as over-production of cortin (Borst 1936), might explain the aberrations in blood chemistry.

BLOOD-UREA

Hæmorrhage.—Experiments which I have carried out on dogs indicate that the rise of blood-urea produced by simple hæmorrhage is slight, averaging only 16 mg. per 100 c.cm. in six experiments in which 20–50% of the blood volume was removed (table I). These results are in accord with those of Stewart and Rourke (1936) and of Kaump and Parsons (1940). Our dogs were neither restricted in their fluid intake nor subjected to several hæmorrhages at short intervals; the work of Meyler (1936) on guineapigs suggests that a much larger rise of blood-urea might have been produced by combining repeated bleeding with deprivation of fluid, but permission to repeat his work, on dogs, could not be obtained.

Cortin.—Borst (1936) has suggested that over-activity of the suprarenal cortex may be responsible for some of the biochemical changes observed after alimentary hæmorrhage; and an increased output of adrenaline is found as part of the response to bleeding. In three further experiments I combined bleeding with the administration of 30 c.cm. of Eucortone in the first experiment, 100 mg. of desoxycorticosterone acetate (D.O.C.A.) in the second, and 7·5 c.cm. of a 1 in 1000 solution of adrenaline at the rate of 1 c.cm. every six minutes in the third. The results, given in table I, show that

TABLE I—EFFECT OF HÆMORRHAGE ON BLOOD-UREA

Dog	Volume of blood taken (c.cm.)	Blood-urea (mg. per 100 c.cm.) Before bleeding	½ hr. after	3–5 hrs. after	20 hrs. after
1	200	35	35	36	28
	260	34	38	36	31
	400	46	54	74	.. *
2	270	30	37	68	44
	460	28	30	36	26
3 (cortin)	350	22	32	38	29
3 (D.O.C.A.)	290	29	29	30	18
3 (adrenaline)	300	18	13	32	..
	200	16	17	23	..

* Died 4 hours after bleeding.

suprarenal extracts, even in large doses, do not increase the "azotæmia of hæmorrhage." The continuous injection of adrenaline made the dog very ill, whereas the dogs treated with eucortone and with D.O.C.A. recovered more rapidly from the shock of bleeding than did the animals not so treated.

Artificial uræmia.—Since an increase in protein intake can be excluded, the rise in blood-urea after external hæmorrhage must be due either to breakdown of body protein or to impaired elimination of urea by the kidneys. To test whether renal impairment was produced, the effect of hæmorrhage on the rate of disappearance of an artificial uræmia was studied. It was found that, when 5 g. of urea in solution was given with a stomach-tube, the blood-urea rose about 50 mg. per 100 c.cm. and returned almost to the original level in six hours. Fig. 1 shows two composite curves, the one derived from six experiments in which urea was given alone, the other based on two experiments in which the administration of 5 g. of urea was followed by withdrawal of 320 c.cm. of blood, after an interval of half an hour to avoid possible interference with the absorption of the urea. The elevation of blood-urea is much more sustained after bleeding, in spite of the fact that the initial rise of blood-urea was less in the two experiments in which blood was withdrawn than in the others. Since, in a previous experiment on the same dog, the withdrawal of 460 c.cm. of blood had led to a rise of less than 10 mg. per 100 c.cm. in the blood-urea, it is not likely that the prolongation of the artificial azotæmia is due to the effect of bleeding on the tissues; the probable explanation is that the elimination by the kidneys of the urea ingested and absorbed was interfered with by the circulatory changes which follow hæmorrhage. Renal impairment might therefore lead to elevation of blood-urea even in the absence of any increase in protein katabolism, though the results of my experiments do not exclude the latter as a causal factor.

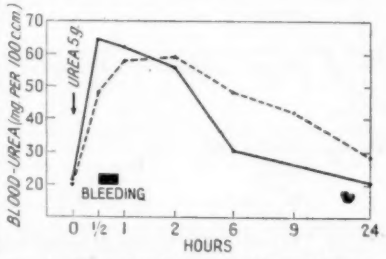

FIG. 1—Chart showing effect of hæmorrhage on the rate of disappearance of artificial uræmia in dogs. Continuous line: composite curve from six experiments in which urea alone was given. Interrupted line: composite curve from two experiments in which the administration of urea was followed, half an hour later, by withdrawal of 320 c.cm. of blood.

PLASMA CHLORIDE

Borst (1936) has shown that the level of plasma chloride is raised in some patients with alimentary hæmorrhage, whereas other workers have reported a normal or even a diminished amount of plasma chloride. Table II shows that both increase and diminution of plasma chloride may be observed after experimental hæmorrhage. The level of plasma chloride rose 2–4 m.eq. per litre after five of the six hæmorrhages studied; this rise, which coincides with rapid dilution of the blood,

can be explained by the passage into the blood-stream of tissue fluid, which has a higher chloride content than has plasma (Loeb et al. 1922). When the hæmorrhage is small, the raised level of plasma chloride persists until the next day. With larger hæmorrhages the chlorides fall below normal limits (fig. 2). After such hæmorrhages the animals eat less meat but drink large quantities of water; hence the fluid absorbed from the bowel contains little chloride, and its addition to the blood explains the observed hypochloræmia.

CONCLUSION

A considerable increase in blood-urea is a well-recognised concomitant of severe hæmorrhage into the digestive tract. My experiments show that over-activity of the suprarenal glands cannot be an important causal factor; they suggest that loss of blood is less important than the fact that the blood is effused into the bowel, whence the nitrogen is reabsorbed. The greatest increases in blood-urea have been recorded in patients deprived of food and fluid (Jones 1939), whereas patients who have had an adequate intake of food and fluid show a relatively slight degree of azotæmia (Black and Leese 1940). It may therefore be inferred that the slight increase of blood-urea proper to hæmorrhage may be aggravated by absorption of nitrogen from the blood in the bowel, especially when dehydration is permitted. Little can be done to prevent nitrogenous absorption from decomposing blood, but dehydration calls for energetic treatment by a diet of adequate fluid content, as advocated by Meulengracht and others.

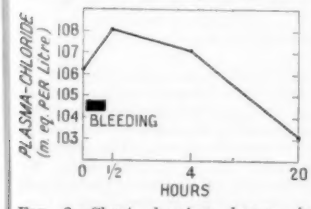

FIG. 2—Chart showing changes in plasma chloride after hæmorrhage.

TABLE II—EFFECT OF HÆMORRHAGE ON PLASMA CHLORIDE

Dog	Volume of blood taken (c.cm.)	Plasma chloride (m.eq. per litre)			
		Before bleeding	½ hr. after	3–5 hrs. after	20 hrs. after
1	200	100	102	104	103·6
	260	103·4	106	100·8	97·8
	400	109·8	113·7		
2	270	113·2	113·2	108·7	108·5
3	460	105·4	107·2	103·3	101·3
	350	107	109	111·5	105

SUMMARY

After severe hæmorrhage in dogs the blood-urea increases by about 15 mg. per 100 c.cm.; the rise in level of blood-urea is not increased by large doses of cortin, D.O.C.A., or adrenaline. Bleeding prolongs the uræmia produced by feeding urea; this suggests that renal function is impaired by hæmorrhage. The changes in plasma chloride after hæmorrhage are relatively slight. The results of the experiments confirm the advisability of giving fluid feeds after alimentary hæmorrhage in man.

I am much indebted to Prof. S. R. Mettier for advice and help; Prof. L. J. Witts for supervising the research and criticising this paper; and Messrs. Ciba, Ltd., for supplying D.O.C.A. in solution for intravenous injection in animals.

REFERENCES

Black, D. A. K. (1939) *Lancet*, **1**, 323.
— and Leese, A. (1940) *Quart. J. Med.* **9**, 129.
Borst, J. G. G. (1936) *Z. klin. Med.* **130**, 74.
Jones, F. A. (1939) *Brit. med. J.* **2**, 332.
Kaump, D. H. and Parsons, J. C. (1940) *Amer. J. digest. Dis.* **7**, 191.
Loeb, R. F., Atchley, D. W. and Palmer, W. W. (1922) *J. gen. Physiol.* **4**, 591.
Meyler, L. (1936) *Acta med. scand.* **90**, 475.
Stewart, J. D. and Rourke, G. M. (1936) *J. clin. Invest.* **15**, 697.

SPONTANEOUS PNEUMOTHORAX
COMPLICATING STAPHYLOCOCCAL SEPTICÆMIA

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SINCE Long (1940) drew attention to the use of sulphathiazole in staphylococcal infections, increasing attention has been paid to septicæmia caused by *Staphylococcus aureus*. This condition is much commoner than was formerly supposed. Of 53 patients who died from septicæmia in the London Hospital in the last five years (exclusive of cases of subacute bacterial endocarditis) the invading organism was *S. aureus* in 41, only 12 being due to a hæmolytic streptococcus. Another fact which has become evident is the frequency with which these patients develop miliary abscesses in the lungs. Thus one of us (E. C. B. B.) found multiple lung abscesses in 75 of 92 fatal cases of acute osteomyelitis. This is important because to cure staphylococcal septicæmia it is necessary to arrest the bacteræmia, by excision or drainage of the primary focus together with treatment by antitoxin and chemotherapy, before the lungs become widely affected.

Maxwell (1934) emphasised the common incidence of *S. aureus* in cultures taken from lung abscesses and heart blood (in 58 of 105 cases in which the bacteriology was studied). Reimann (1933) described 6 cases of pneumonia with multiple abscesses of lung as primary bronchogenic staphylococcal infection; repeated blood-cultures were not performed in these cases, though one in each patient was sterile. The illnesses ran a long course, and all the patients recovered. It seems possible that they may have been cases of septicæmia in which the blood infection was overcome, as in our case 2, or had never been proved positive, as in our case 1. Hughes (1938) described a further 2 cases of staphylococcal pneumonia and suggested that, next to the skin, the lung is the tissue most susceptible to invasion by *S. aureus*. Maxwell (1934) found pyopneumothorax as a complication in 6 of 199 cases of single abscess of lung and in 5 of 116 cases of multiple abscesses of lung. One of us (K. M. A. P.) found pyopneumothorax as a complication of lung abscess in 3 of 116 cases of spontaneous pneumothorax.

It is surprising that in all these reports of staphylococcal infection of lungs nothing is said about spontaneous pneumothorax as a complication, especially since the abscesses mostly develop at the periphery of the lung. Recently, however, 4 cases have been reported in infants:—

Macgregor (1936) reported 3 cases of pyopneumothorax discovered at necropsy in infants, two aged four and one aged six months; and Collis and Foster-Carter (1940) 1 in a baby, aged eight weeks, in which they emphasised the absence of fluid from the pleural cavity.

We have seen 2 fatal cases; in the first a right-sided spontaneous pneumothorax developed, which clinically, radiologically, and on paracentesis showed no fluid, though later a small amount was found at necropsy. In this case the differential diagnosis between a reactivated pulmonary tuberculosis, a ruptured emphysematous bulla, and the rupture of a miliary lung abscess was very difficult. In the second case there was a bilateral spontaneous pneumothorax, and here again the amount of fluid was negligible.

CASE-RECORDS

CASE 1.—Male, aged 55, admitted on April 15, 1940, with seven days' swelling of the left side of his face after he had bitten the inside of his mouth. For two days his left eye had swollen. There was gross swelling of the left side of his face, with œdema and chemosis of his left eyelid and slight proptosis. His teeth were septic, with many infected stumps.

On the 16th two incisions were made in the face and pus was drained. Culture showed *S. albus* and *Streptococcus viridans*. Blood-culture was sterile on two occasions. On the 23rd a course of sulphathiazole (M. & B. 760) 2 g. four-hourly for two days was started, a total of 24 g. being given. On the 26th a blood-count showed hæmoglobin 64%, white

cells 28,000 (polymorphs 87%). The patient's face discharged freely and rapidly improved. On May 9 signs of cellulitis of the left orbit appeared, and a large abscess was drained from the inner side of the eye. Culture as before. On the 12th he developed a sudden pain in the right chest, with signs of a right pneumothorax. There was considerable displacement of the mediastinum towards the left. The diagnosis was confirmed by needling, and the intrapleural pressures were minus 6 plus 6; 200 c.cm. of air was removed, bringing the pressures to − 8 and 0. On the 13th a radiogram of the chest showed a right pneumothorax, with complete collapse of the lung except at the apex, where a small cavity was held open by two adhesions (fig. 1). No tubercle bacilli were found in the sputum. A further 300 c.cm. of air was withdrawn, the pressures being − 8, + 4 at the start and − 6, 0 at the end. On the 14th the patient became much worse and died (fig. 2).

Necropsy.—Complete pneumothorax on the right side with collapse of the right lung. Old tuberculous focus with small

FIG. 1

FIG. 3

FIG. 1—Radiogram of case 1, showing right pneumothorax, with complete collapse of the lung except at the apex, where a small cavity is held open by two adhesions.
FIG. 3—Radiogram of case 2, showing bilateral pneumothorax with numerous large abscesses in the right lung.

cavity at the right apex, over which was the adhesion seen in the radiogram. Two small pyæmic abscesses in the right lower lobe, one of which had ruptured into the pleural cavity. A little cloudy fluid in the right pleural cavity. Left lung was normal. The cellulitis of face had completely healed. The left orbit had nearly healed, and there was no evidence of intracranial infection or of lateral-sinus thrombosis. Culture from the lung abscess grew *S. aureus*. Histological section showed the lesion in the apex to be an old healed tuberculous lesion. Section of the abscess in the right lower lobe showed an acute non-tuberculous abscess surrounded by inflamed collapsed lung tissue.

CASE 2.—Male, aged 12, admitted May 17, 1940, with four days' swelling inside his left nostril. Two days before admission his face and left eye had begun to swell, and he had become increasingly ill. On admission he was very ill but not delirious, with a swelling of the left nostril and several small pustules on the outer side of the ala nasi. There was œdema of the upper face and eyelids and chemosis of the left eye. Blood-culture produced *S. aureus*. Blood-count: hæmoglobin 89%, leucocytes 16,000 (polymorphs 86%).

On the 18th he was delirious, and the œdema had intensified. Staphylococcal antitoxin 20,000 units was given intramuscularly. Sulphathiazole (M. & B. 760) 1 g. was given intravenously and then 1 g. four-hourly by mouth until a total of 30 g. had been given. On the 22nd he developed signs of meningitis. Lumbar puncture showed cloudy fluid under pressure, with 230 cells per c.mm., there being an excess of polymorphs. Culture produced *S. aureus*. Lumbar puncture was done daily for five days. At the end of that time the fluid was clear and sterile. On the 23rd an incision was made in the face, but no pus was obtained. Culture from the pustules on the face had grown *S. aureus*. Blood-culture on May 5 gave 140 colonies, on the 21st 130, on the 24th 50, on the 26th 25 and on the 30th 2 colonies per c.cm. of blood. Cultures on June 1 and 3 were sterile.

Meanwhile the boy had developed a right hemiplegia and was desperately ill. On May 29 signs of a right pneumothorax appeared. His chest was needled and 880 c.cm. of air withdrawn. Intrapleural pressures were + 5, + 15 at the start and − 10, 0 at the end. On the 31st 680 c.cm. of air was withdrawn from right and 160 c.cm. from left chest. On June 2 a radiogram of the chest showed a bilateral pneumothorax with numerous large abscesses in the right lung (fig. 3).

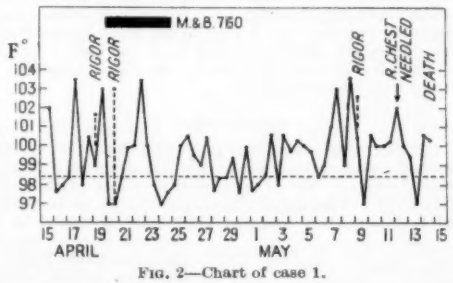

FIG. 2—Chart of case 1.

On the 3rd the patient became distressed and 900 c.cm. of air was withdrawn from the right pleural cavity and an attempt made by continuous suction to get the lung to adhere to the chest wall. This was partially successful. On the 5th 800 c.cm. of air was removed from right chest. The pressures were − 5, + 5 at the start and − 15, − 5 at the end. No fluid was demonstrable in either pleural cavity. The patient rapidly became worse (see fig. 4) and died on the 22nd.

Necropsy.—Extradural and intradural abscesses, with local leptomeningitis. Purulent thrombosis of left ophthalmic veins but no evidence of cavernous-sinus thrombosis. Upper part of right pleural cavity full of air, with little thin pus; lower half contained mass of soft fibrin, with little organisation. Left pleural cavity also contained air but no pus. Many pyæmic abscesses up to 4 cm. in diameter in both lungs. Perforation 0·8 cm. in diameter leading from an abscess in left upper lobe into the pleural cavity. No communication demonstrated between right lung and pleura. Remainder of lungs showed various degrees of collapse, greater on right side than left. Rest of body showed no pyæmic abscesses except few small ones in both kidneys.

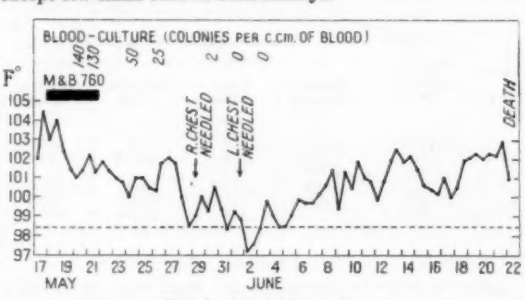

FIG. 4—Chart of case 2.

These two cases indicate how pyæmic abscesses developing in septicæmia due to *S. aureus* can cause spontaneous pneumothorax. They also show how pulmonary complications can bring about death in this condition even if the blood-culture becomes sterile, as in case 2.

SUMMARY

Staphylococcal septicæmia and its pulmonary complications are not so rare as is generally supposed.

Two cases of spontaneous pneumothorax, one unilateral and one bilateral, resulting from the rupture of pyæmic staphylococcal abscesses of lung, are recorded.

In these two cases and in other sreported only a small amount of thin pus collected, and this is often clinically unrecognisable.

REFERENCES

Collis, J. L. and Foster-Carter, A. F. (1940) *Lancet*, **1**, 875.
Hughes, W. (1938) *Quart. J. Med.* **28**, 537.
Long, P. H. (1940) *J. Amer. med. Ass.* **114**, 870.
MacGregor, A. R. (1936) *Arch. Dis. Childh.* **2**, 196.
Maxwell, J. (1934) *Quart. J. Med.* **24**, 467.
Reimann, H. A. (1933) *J. Amer. med. Ass.* **101**, 514.

Medical Societies

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SECTIONS OF SURGERY AND OF THERAPEUTICS AND PHARMACOLOGY

AT a joint meeting of these sections on Nov. 6, with Mr. J. B. HUNTER in the chair and Sir WILLIAM WILLCOX in support, a discussion* on the

Treatment of Burns

was opened by Rear-Admiral C. P. G. WAKELEY. At the beginning of the war, he said, tannic acid was thought to be completely satisfactory as a treatment for burns, but this had not turned out to be so. In a battleship in action there were only sufficient time and space for first-aid treatment. More elaborate care was given later in hospital. Burns occurred from gun-flash, bomb-flash, incendiaries, or petrol. Shock should be treated with plasma-transfusion and morphia in doses of gr. ½; morphia would never kill a man in pain. In first- and second-degree burns there was partial skin loss but signs of dermal circulation remained; in third-degree burns there was total skin loss and the surface was yellowish and dull without signs of dermal circulation. Primary shock depended on the extent of the burn; secondary shock set in a few hours later and was responsible for 80% of the total deaths from burns. Primary might merge into secondary shock. There was loss of plasma from the burned surface and migration of fluid from the blood into the tissues so that the circulating blood became concentrated with a relative increase of cells. Whole-blood transfusion was contra-indicated because it increased the cell concentration, and so were saline and glucose infusions, because they passed quickly into the tissues and increased the œdema. It was necessary to replace the lost plasma protein by plasma-transfusion. Toxæmia following burns had not yet been fully explained; it seemed to be due to streptococcal infection. Thanks to coagulation therapy toxæmia was less common in this war than it had been in the last. In the treatment of sepsis, saline baths were proving valuable. First-aid treatment must be simple, painless and quickly applied. In the limited space available on a battleship some jelly preparation was desirable; there was no time to use a spray. He was using successfully gentian-violet jelly containing Merthiolate 1 in 5000; it was applied without cleansing directly to the burned area. The tubes in which it was stored came to no harm if dropped into sea water or oil. No tannic-acid preparation must be used on burns of the hands or face. Used on the hands it led to increase in œdema, compression of the circulation and necrosis of the fingers. Shock must be treated in hospital. The use of the B.L.B. mask reduced the incidence of fat embolism. After the shock had been treated the patient was taken to the theatre and anæsthetised with gas and oxygen; the burned area was cleansed and dried with an electric hair-dryer, and a preparation to produce tan was applied; if sepsis followed he was given another anæsthetic and the area was cleansed and re-tanned. Tan loosened on the eighth or ninth day leaving a healed scar. Sulphonamide was rarely needed. In third-degree burns the patient needed to replace his sulphur loss, and was unable to do so if he was taking sulphonamides; they also tended to cause vomiting which reduced his body fluids still further. Another method of treatment now proving useful was irrigation within an oiled-silk envelope which enclosed the injured limb. When a burn was complicated by an open wound or fracture the injured part must be immobilised in the usual way. Skin grafting was essential for third-degree burns. After the healing of a first- or second-degree burn it was important to massage the new skin with lanoline daily for six weeks, to prevent the development of keloid. The end-result of these burns was seen not immediately after healing but three months later when keloid and contractures developed; they must be followed up as carefully as fractures. Chemical burns due to phosphorus were treated with 2% copper sulphate followed by triple dye. Masks might reduce the danger of face burns in the future.

Prof. W. C. WILSON said that the systemic disturbance caused by extensive burns was still unexplained. Exposure to excessive heat killed or injured blood-vessels, nerve-endings and nerve-fibres, and the damage to nerves was possibly responsible for the initial shock, though there was little evidence in support. Injury to blood-vessels might be responsible for secondary shock and might begin earlier than was thought, in some cases within 45–50 minutes of the injury. The capillaries were abnormally permeable and serum left them carrying protein, sodium and potassium; the increased corpuscular concentration thus produced was important. Saline and glucose infusions passed quickly through the excessively permeable capillary walls carrying still more protein with them. Shock was most profound in deep burns but the plasma loss was greater in superficial burns. Oliguria was nearly always present for the first 24 hours, and was unaffected by the intake of large quantities of fluid. In toxæmia the characteristic lesion was necrosis of liver cells. Impaired liver function might be indicated by jaundice. Liver necrosis was not found in cases where the burns showed the worst infections. Coagulation therapy did not stop exudation, which continued beneath the coagulum for 24 hours, but it minimised it, relieved pain and diminished shock. Although the underlying dead tissues might be as much as 1 cm. thick, and the coagulum only about 1 mm., it rendered conditions unfavourable for bacterial growth, and so reduced sepsis. Desoxycorticosterone helped to raise the serum sodium quickly to the normal level.

Wing-Commander CECIL FLEMMING said that in the R.A.F., unlike the Navy, there was an opportunity to treat cases early in hospital. Burns usually occurred on hands and faces and were complicated by cuts. If worse injuries were present they were usually fatal owing to the associated shock. He wanted to know how soon to give an anæsthetic and what anæsthetic to give. To say that it must depend on the degree of shock was not sufficient because the measurement of shock depended on the judgment of the surgeon, unless some pathological clue was available. He had tried going by the hæmoglobin concentration, but it was not a reliable guide if the patient had been bleeding. The choice of anæsthetic was limited when the face was badly cut, the cheeks perforated perhaps and the nose charred. He had chosen intravenous anæsthetics in these cases, but he thought that one death had probably been due to 3 c.cm. of intravenous Pentothal. He would like to know whether he would be justified in performing tracheotomy in such cases to enable the anæsthetic to be given intratracheally. He had given up thinking in terms of shock and now went by the pulse-rate, the blood-pressure and the state of the body fluids. He found it impossible to make a clear distinction between primary and secondary shock, and judged each case on its merits. He found that by giving reconstituted dried serum at once, he could treat some cases earlier than would otherwise be possible.

In the absence of Prof. L. J. WITTS his paper was read by Dr. D. A. K. BLACK. In burns, he said, death was likely to occur early from shock or later from toxæmia. Using citrated plasma and reconstituted serum they had seen improvement in all patients. They gave plasma to any patient in whom the hæmoglobin was 10% above the probable previous value; reckoning this as 100 it was possible to calculate the plasma lost by the formula:

$$\frac{Hb}{100} = \frac{5}{5-x}$$

where x is the plasma lost in litres. Plasma to the amount of the calculated deficiency should be run in quickly, and more should be run in later by slow drip to make good the loss by exudation. Fluids should be given freely when the patient could take them, and the fluid balance charted. They had seen patients recovering who otherwise would have died from shock.

Mr. A. H. MCINDOE said that the aim in the treatment of burns was to save life and preserve function. The local treatment of war cases had shown that coagulation treatment, especially by tannic acid, had been carried

* An illustrated report of this discussion will shortly be obtainable from the R.S.M. price 1s. post free.

too far. For first- and second-degree burns coagulation had proved excellent. For third-degree burns it was likely to fail; sepsis occurred deep to the coagulum and months might elapse before it separated, leaving a heavily infected granulating surface. By that time the patient was emaciated and ill from toxæmia and grafting was impossible. In third-degree burns of the hands coagulation treatment led to crippling, and œdema might lead to further deformities. The raw surface of a third-degree burn of the hand must be covered by a skin graft if function was to be maintained. The same principle applied to the face; coagulation therapy immobilised the eyelids, the eyes became inflamed and inaccessible to treatment and sight might be lost. Tanning of third-degree burns, especially of the hands and face, should be abandoned.

PHOTOGRAPHS AND FILMS

Mr. McINDOE then showed a series of photographs of cases treated with tannic acid illustrating such points as deformities of the hands, with necrosis and loss of terminal phalanges, and contractures of eyelids leading to ectropion and corneal ulceration. He was getting good results, he said, by treatment with saline baths at 105° F. The patient could be completely immersed, and usually found after the first bath that pain was relieved. On being lifted out by a skilled team he was laid on a sterile sheet and the burned areas were covered with tulle-gras and then with saline packs. It was a rule of the ward that no patient was to be hurt. When the granulating areas were clean they could be treated with pinch or Thiersch grafts.

Lieut.-Commander JOHN BUNYAN showed a coloured film of a child with an extensive burn of the abdominal and lower thoracic wall which had failed to heal over a period of months. The area was treated by irrigation within one of the Bunyan-Stannard oiled-silk envelopes which he had devised. The irrigating fluid was saline containing electrolytic hypochlorite; the envelope was fixed in place round the body and the irrigating fluid run into it at intervals and then drained out. It was painless; the child who had previously been alarmed by the mere presence of a doctor in the ward was laughing during treatment. The course of healing could be watched through the oiled silk, and dead tissue and stale exudates were washed away during irrigation. Healing was rapid.

DISCUSSION

Sir HAROLD GILLIES thought the case for treatment by other methods than tannic acid was strong and agreed that saline treatment was improved by the Bunyan bag. He found the sulphonamide drugs useful, especially when applied locally as a powder or made up with glycerin and cod-liver oil.

Mr. R. VAUGHAN HUDSON suggested that treatment of a burn with tannic acid was the same as preliminary suture of a wound without drainage. If skin was not completely destroyed it had power of regeneration, but if destruction was complete the burned area could only heal by granulation and scar tissue unless skin was brought from elsewhere.

Colonel LEONARD COLEBROOK agreed with Sir Harold Gillies that there was hope in local treatment with sulphonamides. He had treated 38 wounds once or twice a day with sulphonamide powder and had found that hæmolytic streptococci had disappeared within 2 or 3 days; there had only been 2 failures in the series.

Mr. T. P. KILNER said that at the Ministry of Pensions hospital at Roehampton they saw hands crippled as a result of tannic-acid therapy; they managed to get some improvement with wax baths. He asked whether patients were instructed to make active movements during saline-bath treatment.—Mr. McINDOE replied that they were encouraged to use their hands and limbs in the saline bath from the start.

SECTION OF OTOLOGY

AT a meeting on Nov. 1 Mr. LIONEL COLLEDGE, the president, opened a discussion on

Injuries of the Ear

He divided war injuries into those with rupture of the tympanic membrane and those with concussion. Both might occur together, but this was not common and it almost seemed as though rupture was a protective mechanism against concussion. When the drum-head was ruptured the margins of the tear were often seen everted towards the meatus, because a wave of positive pressure had been followed by one of a negative pressure. The positive pressure was shorter and more powerful, the negative pressure was weaker but lasted longer. The physical conditions were the same when some windows were driven into a building while others were torn out; and similar effects had recently been shown to occur in blast injuries of the lungs. Concussion without rupture of the drum-head might take effect through the bones of the skull or merely result from alterations in atmospheric pressure acting upon the ear itself. Cases occurred more commonly among war injuries, but were occasionally seen in civilian practice as the result of explosions of fire-damp. Wounds of the ear in warfare were not very common, or rather, were not commonly seen, because like wounds of the heart they were nearly always fatal. If removal of the missile was necessary and was impossible along the route of entry, the retro-aural incision was the right one and the radical operation on the one required. Loose pieces of bone and damaged soft tissues must be removed at the same time. If the missile went deeper into the petrous bone it might be necessary to open the labyrinth in order to reach it. Facial paralysis and injury to the temporamandibular joint were reported to be commoner with wounds than with suppurative conditions. Injuries of the type seen among aviators were known before the aeroplane, from aeronauts and from workers in caissons. They were due to rapid changes in the middle ear from alterations of pressure. It was interesting to note that in ascent there was a spontaneous opening of the eustachian tube which compensated for this, but in descent this was absent and voluntary swallowing became necessary to equalise the pressure. He classified fractures of the skull into those of the external auditory meatus, the mastoid, the walls of the tympanum and the petrous portion of the temporal bone. These last happened in probably 25% of cases of fracture of the skull and were usually due to blows or to a fall on the head; they also occurred, less commonly, through sitting down hard, so that the spine transmitted the force to the occipital bone, and from blows on the chin transmitted by the mandible. There were also independent fractures of the petrous bone and microscopic fractures of the bony labyrinth which broke up like an egg-shell.

Miss JOSEPHINE COLLIER, speaking of civilian injuries produced by aerial bombardment, based her remarks upon two visits to Barcelona where she had had an opportunity to talk with Dr. Raphael Trueta, the throat and ear surgeon to that city. When a foreign body was lodged in the external auditory meatus the mastoid or the face was the point of injury. It usually caused great pain, but sometimes might be missed owing to the severity of other injuries. She advised routine examination of the ear in all cases as soon as possible. Foreign bodies entering the middle ear were bomb fragments and usually small; other fragments might have entered the mastoid or the temporamandibular joint. Injuries of this region from big fragments did not reach hospital; the patients were dead. A foreign body needed removal only if it was producing some reaction, when the radical operation was necessary; but it should be as conservative as possible owing to the danger of meningitis. Treatment consisted in not being busy and in not putting in watery drops; it should result in there being no suppuration. Blood could be drained from the external meatus by laying the patient on the appropriate side. When the middle ear was full of blood, aspiration by a Siegel's speculum should be followed by closure of the meatus by cotton-wool.

Mr. V. E. NEGUS spoke from the experience of a department of a large E.M.S. hospital to which cases involving the head and neck were admitted. He said that ear injuries seldom happened alone; even with rupture of the tympanic membrane from blast, there were likely to be other effects such as cerebral hæmorrhage. He agreed on the importance of routine examination, and summed up treatment in the phrase "leave them alone." His cases were treated by mopping the

skin round the meatal orifice twice daily with a solution of biniodide in spirit, care being taken to touch the superficial part of the meatus only. Moisture encouraged inflammation, so no drops were instilled and no wicks inserted, but a light plug of wool was put in after the cleansing. He did not attempt to remove wax or blood-clot from the deep meatus. Sulphapyridine was given in all cases. When the mastoid was involved it was not necessary to rush at it. Operation, if needed, should be done after two weeks or more. This was the opposite technique from that followed by otologists in the last war; and he ascribed the change to chemotherapy.

Mr. F. W. WATKYN-THOMAS said that the alternate waves of pressure and suction in blast could now be taken as proven. The petechiæ seen when no rupture of the drum-head was present were the result of the suction. He quoted a case in which the effect of pressure was seen on a mass of wax which had been driven so hard against the drum-head that on removal it retained the impression of the handle and short process of the malleus. Mr. W. M. MOLLISON, as another example of the result of pressure, told of a case resulting from an explosion in a factory in which he had discovered the incus in the mastoid antrum.

Mr. E. D. D. DAVIES disagreed with Miss Collier on the advisability of removing blood from the middle ear; judging by his experience of fractured skulls in civil practice, it disappeared rapidly by absorption.

Prof. HUGO FREY said that the shape of the perforation, as seen after some days, depended upon the direction of the fibres at the site of the original rupture, which was a slit and not a hole. Even a large perforation might be persuaded to heal after a long delay if the margin was slightly irritated so that the epithelium which had grown round the margin from skin to mucous membrane was removed. This might be done by rubbing it with a small mop of wool dipped in saline.

Mr. R. J. CANN pointed out that cracks of the drum-head seen in civil life from such things as a box on the ear were always linear splits. In blast injuries the same must happen from the wave of positive pressure; the succeeding negative wave tore the drum-head out thus giving rise to irregular holes.

SECTION OF LARYNGOLOGY

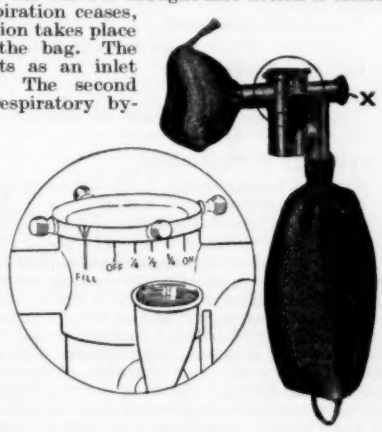
FOLLOWING the address by Mr. T. B. LAYTON, the president, on teaching in laryngology (reported in our last issue) a discussion was opened by Mr. F. C. W. CAPPS, who thought that the special surgeons should not attempt to take over any teaching from the physicians and surgeons in charge of the general departments, but that they should amplify, adopt and repeat such teaching. He suggested that additional beds in the general units should be allotted to cases from the special departments, the patients being admitted under the professors of medicine and surgery and cared for jointly by them and the specialist concerned. In this way the students would hear the cases examined from both points of view, and the surgeons in the special departments would be able to keep in touch with general medicine and surgery. Mr. E. D. D. DAVIES considered that undergraduate and postgraduate education could not be combined in the same institution. He advocated the use of rubber models of the ear and larynx and the examination of students one by another to compensate for insufficiency of patients. Mr. W. M. MOLLISON had no use for models, the students must examine patients; and the place for them to do this was the outpatient department. Prof. J. A. RYLE claimed still to be a general physician though he admitted leanings towards certain parts of medicine. He feared that the President depended overmuch on an objective approach on the part of the young doctor, but he was an advocate for the combined ward-round. Mr. NEGUS suggested that throat and ear surgeons should be called regional surgeons instead of specialists.

Mr. LAYTON said in reply that he supported the idea of the combined ward-round, and pointed out that this first arose at St. Bartholomew's with the once famous surgical consultations.

New Inventions

AN IMPROVED VINESTHENE INHALER

THE Oxford inhaler illustrated possesses two features which are not incorporated in Goldman's well-known inhaler. The first is a one-way inlet-valve (X) to allow inspiration of external air if and when the bag is empty. Respiration takes place normally into and out of the bag. Only if the bag becomes emptied does this valve come into action and the patient is thus never exposed to the suffocating experience of attempting to breathe from an empty bag. If the valve is brought into action it closes as soon as inspiration ceases, so that expiration takes place entirely into the bag. The valve thus acts as an inlet safety valve. The second feature is a respiratory by-pass which allows the vapour concentration to which the patient is exposed to be increased gradually. The by-pass overcomes the unpleasantness resulting from the "all-or-nothing" principle of administering anæsthetic vapours. By rotating the wheel control the concentration of vapour can be increased gradually from zero to maximum. Thus an excessive initial concentration of anæsthetic is prevented, and the risk of a patient resisting induction by coughing, crying or laryngeal spasm is avoided.



The inhaler was made for us by Medical and Industrial Equipment Co. Ltd., of 12, New Cavendish Street, London, W.1.

The illustration is reproduced from "Essentials of General Anæsthesia," by Prof. R. R. Macintosh and Dr. Freda B. Pratt, by permission of the publishers, Blackwell Scientific Publications Ltd.

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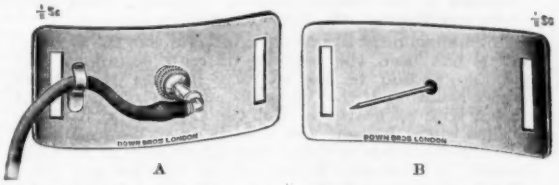
NEEDLE FOR USE IN SPONTANEOUS PNEUMOTHORAX

IN certain cases of spontaneous pneumothorax it becomes necessary to keep a needle fixed in the pleural cavity to prevent the rapid development of tension. Most pneumothorax needles are not well suited to this purpose, since it is difficult to attach them to the chest



A B

Cannula, plate and adaptor. A = Outside view. B = Inside view.

wall and they tend to be dislodged by the patient. The needle illustrated here was designed to overcome these difficulties, it consists of:

1. A short cannula provided with a sharp trocar and a blunt pilot. The cannula is 1¾ in. long and 1 mm. bore; this is a convenient size but it could be made of any length.

2. A metal plate which can be strapped firmly to the chest wall. The cannula is passed through a hole in the centre of this plate into the chest, and is fixed in the desired position by means of a screw clamp.

3. A right-angled adaptor, one end of which plugs into the cannula while the other is attached to a length of rubber tubing.

The whole combination weighs very little and projects only a short distance from the chest. Should the cannula become blocked the adaptor is withdrawn and the blunt pilot is inserted to clear the lumen. The needle may be connected either to a simple water-sealed drainage bottle or to a continuous gentle suction apparatus.[1]

This needle was made for me by Messrs. Down Bros.

A. F. FOSTER-CARTER, D.M. Oxfd

Brompton Hospital.

Reviews of Books

Physiology of Micturition

By O. R. LANGWORTHY, L. C. KOLB and L. G. LEWIS, from the subdepartment of neurology and James Buchanan Brady Urological Institute, Johns Hopkins University. London: Baillière, Tindall and Cox. Pp. 232. 19*s*.

THE authors of this book have worked for several years on their subject, carefully repeating the classical experiments from those of Mosso and Pellacani of last century to those of Barrington in the last 25 years. They have, therefore, a solid basis of experience for evaluating their more strictly original contributions, many of which deal with the influence on micturition of the cortex and other parts of the brain. The book is comprehensive, and deals with the anatomical, pharmacological and clinical aspects of the subject, as well as with the physiological, but in many chapters there is little attempt to weigh evidence to the satisfaction of the reader. A wealth of facts and findings is provided, and conclusions are drawn, but we should often like to know the authors' train of thought in reference to a stated difference of opinion between two observers. This baldness is relieved by other chapters—for instance, the 12th contains much sound criticism of the too ready acceptance of antagonism between sympathetic and parasympathetic nervous systems. The authors point out that these innervate different structures, and they believe that opening of the "internal sphincter" is linked to the activity of the bladder wall mechanically rather than by any subtle interplay of reflexes. Considering the variety of subjects and problems brought under review, the book is Spartan in its dimensions. It gives the impression that its writers are high authorities on their subject but that they have set out to devote as little space as possible to their opinions and as much as possible to facts, though the latter are often derived from their own experiments. A lot more work has been put into it than is apparent from its size.

Neurosyphilis

By C. WORSTER-DROUGHT, M.D. Camb., F.R.C.P., physician to the Metropolitan Hospital and the West End Hospital for Diseases of the Nervous System. London: John Bale, Sons and Staples. Pp. 241. 10*s*. 6*d*.

THE management of syphilitic infections of the nervous system has been the concern of both neurology and syphilology, and it has suffered because the expert diagnostician and the therapist are so often out of contact with each other. But the experienced neurologist has found himself well able to treat neurosyphilis, while the physician in charge of a department of venereal diseases has hesitated to embark on detailed and often difficult neurological diagnosis. Dr. Worster-Drought has attempted to bridge the gap between the two groups of workers, and in so doing he has helped mainly the syphilologist, for the monograph contains little that is new or original and the twelve chapters dealing with the clinical and pathological aspects of neurosyphilis have their counterpart in any good textbook of neurology. The practitioner may improve his general knowledge of neurology from these chapters, but the one on treatment, which describes orthodox therapeutic methods with their disadvantages and alternatives, will appeal to him more. The less experienced reader will be dismayed by the perpetuation of such terms as "neuro-recurrence" and "colloidoclastic shock," and he will hardly recognise meningovascular syphilis under the cloak of "diffuse-cerebro-spinal meningo-vascular (or interstitial) neurosyphilis." Too much emphasis perhaps has been laid on nomenclature and classification in a disease whose boundaries are so vague.

While the book does not claim to be an authoritative and critical work of reference it will be found useful for general reading on a too often neglected subject.

Applied Physiology

(7th ed.) By SAMSON WRIGHT, M.D., F.R.C.P. London: Humphrey Milford, Oxford University Press. Pp. 787. 25*s*.

ABOUT a third of the figures in this edition are new, and the text embodies most of the advances in physiological knowledge since 1936. Like its predecessors it is a treasure-house of information for senior preclinical and clinical students. Cross-references, italics and footnotes are freely used and place the book in the category of those which teach as distinct from those which merely make information available. Prof. Samson Wright displays a little apprehension about increasing size, but few authors could compress the same amount of information into the same number of words, and the publishers could scarcely cram more into a page. Apart from the local emphasis there is little guide to what is and what is not of fundamental importance; only students who already know their way about the subject of physiology should use the book. As a solid bridge between physiology and medicine, with a beneficial action on each, the book maintains its primary value.

Legal Medicine and Toxicology

(2nd impn.) By T. GONZALES, M.D., M. VANCE, M.D., and M. HELPERN, M.D., medical examiners of the City of New York. London: D. Appleton-Century Co. Pp. 754. 50*s*.

SINCE this book appeared three years ago it must have won many adherents in this country. No book on forensic medicine and toxicology is more practical and comprehensive, and its great gallery of illustrations is almost all of the first water. The authors have had, between them, a vast experience in most branches of the subject. The sections on identification, infanticide and abortion still seem regrettably brief, and there is, of course, the inevitable difficulty over the law for 48 states. The lack of reference to the English law is natural, but in this country the book will be used not as a legal reference but for the undeniable excellence of its sections on the common practical aspects of the subject—death from natural causes and death from injury, including firearm wounds.

Ross and Fairlie's Handbook of Anæsthetics

(5th ed.) Revised by R. J. MINNITT, M.D. Edinburgh: E. and S. Livingstone. Pp. 364. 12*s*. 6*d*.

IN this edition Dr. Minnitt has added three new chapters to cover processes which have come into use since the last one. These deal with cyclopropane and closed-circuit absorption methods, with vinesthene, and with the therapeutic use of oxygen, helium and carbon dioxide. They tell the student all he needs to know about these subjects. As might be expected analgesia and anæsthesia in obstetrics are particularly well discussed, but the chapter on spinal analgesia does not seem full enough to give the student a thorough insight into the method; Etherington Wilson's technique, for example, is not mentioned. There are some other minor revisions necessary. The carotid body is not given the mention which it deserves from its now recognised place in respiratory regulation, morphine for young children is not ruled out by the most recent authoritative pronouncements, and the dosage of Nembutal given is below that usually recommended. These, however, are small matters compared with the all round virtues of the handbook, which include large clear print and plentiful illustrations.

1. See Marriott, H. L. and Foster-Carter, A. F. *Lancet*, 1940, **1**, 122.

IRELAND

BOVINE TUBERCULOSIS

No information has ever been available as to the extent of bovine tuberculosis among animals in Ireland, and until the recent study made by Dr. Cecil Mushatt there had been no attempt to discover the extent of human infection by the bovine type of tubercle bacillus. Dr. Mushatt, working with the aid of a grant from the Irish Medical Research Council, has now investigated this subject, and has summarised his findings in the October issue of the *Irish Journal of Medical Science* (p. 683). His conclusions have an important bearing on problems of public health as they affect Ireland. Material from the cervical glands, the bones and joints, and the meninges was studied in 50 children under 15 years of age. The series is admittedly small, but the sample appears to be as representative as possible, for while 27 of the cases were from Dublin city and county the remainder were from 12 other counties, including areas in each of the four provinces. In the cervical-gland cases 10 out of 14 yielded the bovine type, in the bone and joint cases 4 out of 22, and in the meningeal cases 3 out of 12; in 2 cases of primary abdominal tuberculosis the human type was found. Dr. Mushatt concludes that while human tuberculosis of bovine origin is only a relatively small part of the whole problem of tuberculosis in Ireland, nevertheless that form of tuberculosis causes a vast amount of suffering and ill health. The value of Dr. Mushatt's paper is increased by his discussion of methods of prevention, and his criticism of Irish legislation in so far as it concerns the control of the milk-supply.

A HOSPITALS SWEEPSTAKE

A further sweepstake in aid of the Irish hospitals, the thirty-first of the series, was conducted on Oct. 23. It resulted in a contribution to the hospitals fund of £10,075. The total sum which has been collected from the whole series is a little over £14,000,000. The sweepstake just concluded was confined in its operations to Ireland. At present the holding of the trustees is stated as £8,538,440. Approximately £1,500,000 of this is intended for the finishing of county hospitals and institutions, and the rest should go to the necessary additions to the voluntary hospitals and building of new ones, and to provide an endowment fund to meet future deficits. Last year the amount of deficits met from the fund is stated as £163,000. The date of the next sweepstake has not yet been fixed, but it is hoped that it may be possible to hold one in connexion with the Grand National next March. In the meantime a sweepstake is to be held in December in aid of the Irish Red Cross Society.

THE PEAMOUNT INDUSTRIES

Some ten years ago the committee of the Women's National Health Association of Ireland, with the helpful guidance of Sir Pendrill Varrier-Jones, established an industrial colony in connexion with its sanatorium at Peamount, co. Kildare. It was run on similar lines to the famous colony at Papworth but has not developed as was hoped, and the number of persons taking advantage of it appears to have dwindled in recent years. The committee found that in recent years it was losing an average of £500 a year, while only from 10 to 20 people were ordinarily employed in the colony. A few weeks ago the committee found itself compelled to decide to close down the industries section from the end of the year. This decision has roused a considerable amount of public opposition, mostly from people who had not previously taken any interest in the work of the colony or taken any trouble to inform themselves of the facts. Nevertheless, many regretted that an interesting experiment, and one which at one time promised well, should come to an end without careful study as to the possibility of continuing it without being too heavy a burden on a purely voluntary society. The industries have never received any financial help from the government or from the sweepstake funds. On Oct. 23 Senator James Douglas moved in the Senate that the Minister for Local Government and Public Health should be requested to appoint a departmental committee to inquire into the possibility of carrying on the industries. He argued that the question should not be regarded merely as one of finance, and that the view should not be taken that the industries must pay their way as a business undertaking. After some discussion the Parliamentary Secretary decided that the department would be willing to consider any representations that might be submitted to it by the Women's National Health Association and to make whatever investigation might be thought necessary. He consented to discuss with Senator Douglas the form which such investigation should take.

In England Now

A Running Commentary by Peripatetic Correspondents

EARLY one morning in September I received a telephone message to go at once to the hospital. I was not told what had happened, but was asked to approach with care. Much to my surprise (for the barrage and aerial bombardment were in progress) I succeeded in getting a taxi. It was an exciting drive, enlivened by my driver's speculations as to the sites of the various fires. "I reckon that's the Savoy 'otel, guvnor, or do you think it's the Cecil?" We were stopped by the police. "I'm taking this gent to St. Thomas's 'orspital," said my indomitable driver. "Sorry; you can't go," said the policeman. "I'm taking the gent to the 'orspital," persisted the driver, let in his clutch and off we went. At the St. Thomas's side of the bridge we ran into masses of masonry, and after bumping about a little my driver had to stop, saying "Sorry, you'll 'ave to walk the rest, guv'nor; I've done my best"; and so he certainly had.

When I arrived inside the hospital I found those of my colleagues who had been spending the night there looking somewhat shaken, which was not surprising seeing that most of them had been sleeping in the devastated area and had had their windows blown in and their beds covered with glass and ceiling. Desperate efforts were made to rescue some of the buried, and for several hours we hoped to save at least one of them who was alive when the tunnellers reached her after some hours of dangerous work. But unhappily she died before it was possible to extricate her.

During the night bombing continued. One of the wards was occupied by 25 gynæcological cases, most of whom had been operated on within the previous few days. Every window was blown in, and all doors blown off their hinges. Every bed was covered with glass, but by a miracle not a patient was scratched. The two nurses in the ward removed the glass-covered blankets from each bed, and put new blankets on every patient. Not a patient left her bed, and when the rescuers arrived the patients were all singing in the dark.

The following morning found us with no option but to evacuate all patients from the hospital. During the afternoon, however, by strenuous efforts on the part of the engineering staff, more water and electricity became available. The staff and governors unanimously decided to attempt to reopen the hospital, improvising wards in the basement and strengthening those on the ground floor. Two days later we were able to plan to open by the following week a total of 206 beds, including 57 in the basement. The bombing made the housing problem acute, and new accommodation had to be found for some 60 maids.

Soon afterwards some members of the consulting staff were with the resident medical officers in their room near the centre of the hospital. We heard the sirens, but there was no sound of gunfire or of aeroplanes. We went downstairs to take up our stations in the central hall of the hospital, which had been planned as a receiving room for casualties. I was sitting on a bench with four or five others and suddenly saw a vast sheet of flame some twenty yards from me, accompanied by a devastating explosion. Those of us who were not blown off the bench sat huddled up waiting for the roof to fall on us. Missiles, mostly large, hurtled all round us, but nobody was touched. For a moment or two after the explosion there was absolute silence. Then a man's voice said "Christ!" and a woman's, rather plaintively, "I don't think I am going to like this at all!" Then there was a babel of talking and shouting. We flashed our torches but they were almost useless in the dust and mirk of the explosion. We began to scatter, and a voice shouted,

"Go carefully everybody—there may be no floor." For a time all was confusion. Our carefully made plans were wrecked in a moment. Our reception-room was devastated, our operating-theatre wrecked. Already men were bringing in casualties, and asking where to put them, and for a time nobody knew. Difficulties were increased by the darkness; one could not find one's colleagues; but in a remarkably short time order was restored. We went into the wrecked operating-theatre and grabbed everything we could lay hands on, carrying it out on stretchers, trays, tables, and in our pockets. Within an hour a new theatre had been improvised at the other end of the hospital, and a surgical team, complete with green overalls and masks, were busy operating. Like many others, I lost all sense of direction wandering about in the dark basement, where only occasional glints of a shaded torch were allowable, for aeroplanes were still busy overhead, and the barrage was in full swing. I remember breaking into various wrecked rooms, shouting but finding nobody, till I came on a fire at the end of the wreckage and beat a retreat. Fires broke out at each end of the wreckage, a biggish one at the dispensary end where many gallons of spirit got alight.

When we left the resident medical officer's room a house-surgeon and the assistant hospitaller stayed talking in the anteroom. The bomb actually passed through this room, utterly destroying it, and they were buried deep in the debris; in fact it was only by accident that one of the heroic rescuers discovered a knee sticking out of the debris, and digging down under this knee he found a face. It took an hour to dig these two men out, and this operation was the more dangerous because of fractured gas mains in the wreckage, quite close to the fires which were blazing at each end of it. The house-officer sustained a fractured skull, and the padre cuts and bruises only. Both have made good recoveries.

Another house-officer had a miraculous escape. He came down to the central hall with us, but went back for his tobacco pouch. He heard the bomb as he was going up the stairs, and jumped round a corner, so probably saving his life. The blast blew him downstairs, and he alighted on the main corridor as it subsided into the basement. He was uninjured, though bruised and shaken. Unhappily we lost one nurse, killed, a woman A.R.P. worker who died of wounds, and two house-officers, killed; while a number were more or less seriously injured. By about 10 o'clock all the injured had been dealt with, and there was not much to do except to wander round the basement wards and see that everyone was all right. It was a long and trying night. The whole habitable part of the hospital basement was packed, and in almost complete darkness; the drone of the German aeroplanes was almost continuous, as was the noise of the barrage and of exploding bombs. In peace-time our psychologists had warned us to be prepared to have the hospital stormed by screaming people, and to have outbreaks of hysteria in the wards themselves. In point of fact not one whimper or lamentation was heard from start to finish.

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I got home at about 7 A.M. that morning, as black as a sweep, and a hot bath was very pleasant. By the following evening our magnificent works and engineering staff had once more succeeded in restoring full services. No central heating is available, but food is provided from the students' club on the opposite side of Lambeth Palace Road. Outpatients are seen on the ground floor. Urgent cases are admitted, and for less urgent cases requiring inpatient treatment admission is arranged in one of the affiliated sector hospitals under the E.M.S. A new home has been found for the medical school in Surrey. Within a week our energetic school council took over an empty girls' school there, and another big house on an adjacent piece of land. Laboratories have been equipped for the teaching of anatomy and physiology, and by the kindness of the governors of a famous school their laboratories are available for the teaching of chemistry and physics. Our students are well housed in beautiful surroundings, and one feels that when the time comes to bring them back to London they may not altogether welcome the change. We are busily negotiating to obtain one of the sector hospitals as a new home for the hospital itself. Obviously no rebuilding can be attempted in war-time, and it is also evident that the rebuilding and reconditioning of the whole hospital may occupy two or three years after the war is ended. But we older men all feel that the self-sacrifice, courage and fine spirit shown by the younger generation during the time of trial will ensure that the new St. Thomas's will be worthy of the old.

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I have been turning over the pages of two medical journals printed in Berlin towards the end of September and have been trying to picture what medical life is like in Germany now, but I fear without much success for the *Deutsche* although it retains its blue cover—already lost at this stage of the last war—contains little local colour. Out of the 26 pages of text not even a whole page is given to the *kleine Mitteilungen* (the little matters of medical life and politics). It makes one wonder what the present editors do. One of the late editors when he lunched at my club some years ago told me he only spent three or four half-days a week on the paper and did not go down to the office every day. His chief interest lay elsewhere, for he was covetous of the brass things hanging on the smoking-room wall of which he was evidently a connoisseur. He lost his job soon after, poor chap, on racial grounds. Although paper may be plentiful—especially for inset advertisements which are almost exotic—there seems to be some shortage of general practitioners, for a rather sharply worded memo speaks of doctors who leave their insurance practices without giving proper notice, thereby spoiling the orderly plan for treatment of the civilian population. To meet the difficulty of crowded consulting-rooms in Berlin some of the panel doctors are to make regular outpatient tours. There is also a shortage of midwives and local authorities are asked to make it easy for suitable women to take up training provided they bind themselves to practise in the place for not less than 5 ensuing years. Some small items are of ephemeral interest. For instance, the travelling hospital of the German Red Cross, after assisting German refugees from Volhynia, and then Belgian and French refugees in the west, is now at Belgrade caring for Germans returning from Bessarabia. A pleasant feature is a little note on Professor Anschütz's seventieth birthday. But can it be puckish humour that prompted the editor to fill a tiny blank space on his page of health-resort advertisements with a notice of Gruhle's new book on suicide? And I ask myself what is the significance in the choice of *Misserfolge* (failures) for the section entitled Varia and of the quotation from Paul Römer "Whoso would build his life solely on his own merit has nothing to expect from his fellow men," or Vaihinger's remarkable epigram "Truth is only the most expedient error."

* * *

My young friend, the flight lieutenant, was recently invited to join a shooting party on the old colonel's estate, not far from his aerodrome. He was not very experienced with a shotgun, but he is always willing to try a thing once. The first flight of birds came over between the Colonel and the Admiral, and for fifteen exciting seconds civil war ensued as the Colonel and the Admiral pinched each other's birds. But his letter shall tell the story: "We then moved on to the next field, when a bird got up on the right, between mine host and B, who is my squadron leader. Mine host missed it and B knocked it down. That left just me, and I determined that the next thing that moved would be riddled before it had its undercarriage up. Hardly had we gone ten yards when a heavily laden pheasant got up somewhere between my feet and made for the hedge behind me. I whirled round, and just as it completed its second flap I let fly with one barrel and was astounded to see the unfortunate aged bird do a nose dive and crash. My pride in bringing him down was considerably damped when B whispered in my ear, 'The idea, old man, is to shoot these birds, not blow them to bits.'"

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There was a young surgeon of Piedmont
Who healed his new wife by débridement.
He missed what his bride meant
When she talked of debridement
But he murmured politely "évidemment."

THE LANCET

LONDON: SATURDAY, NOVEMBER 16, 1940

FLOTSAM AND JETSAM

EXTENSIVE experiments by himself and his colleagues on the transmission and infectivity of bacteria in air and in moist droplets led CARL FLÜGGE (1847–1923) to promulgate the view that certain respiratory infections—he instanced diphtheria and whooping-cough—are contracted almost exclusively by intimate and immediate contact with droplets expelled by an infective patient in talking, coughing or sneezing. He believed that the effective range of these droplets after coughing was not more than three or four feet, so that, for example, a susceptible person would have to remain for 24 hours within four feet of a tuberculous patient if he was to run any appreciable risk of becoming infected. He did not, however, deny that other infections, such as the acute exanthemata, might be spread to a distance by air-borne dried particles. Unfortunately present-day practice often uses "droplet infection" and "air-borne infection" as synonymous terms, but if progress is to be made in the prevention of respiratory infections it is essential that the differences between these two methods of spread should be clearly understood and defined, even if there is an ill-defined borderline. Droplet infection, in the sense that FLÜGGE used it, is the direct spread of infection by moist droplets to persons within a radius of three to four feet, while air-borne infection includes the transmission of infection to greater distances either by very fine droplets which remain suspended in the air to be carried hither and thither by air-currents, or by dried infected dust-particles raised into the air and similarly transported. Thus, droplet infection might be likened to rain falling through the air, and air-borne infection to mist suspended in it. It would perhaps make for clarity if the former were called "projectile" and the latter "floating" infection.

Droplets expelled in talking, coughing and sneezing are obviously not all of uniform size; there are coarse droplets that fall quickly to the ground to infect the dust, and these are probably seldom responsible for the direct spread of infection; the majority are smaller—1 mm. or less in diameter—which can be inhaled, and infect directly; and there are droplets 0·1μ or less across which according to WELLS are so small or quickly become so by evaporation that they remain suspended in the air like smoke, the so-called droplet-nuclei. The part which these droplet-nuclei play in initiating infection will depend on their viability in air, on the infective dose of the bacterium or virus contained in them, and thus indirectly on their total number in the air. To take concrete examples, chicken-pox is certainly spread by droplet-nuclei, and, because the infective dose of the causal virus is very small, the concentration required to initiate infection is also very low. On the other hand, there is no direct evidence that scarlet fever or diphtheria can be spread by droplet-nuclei although their materies morbi is often air-borne in dust-particles, but if droplet-nuclei do play a part in the transmission of these infections a much higher concentration of them would probably be required because of their low infectivity.

These considerations have an important bearing on any attempts to prevent respiratory infection. It has been estimated[1] that the "muzzle velocity" of droplets expelled in a sneeze—and the camera has demonstrated conclusively that they come mostly through the mouth, not the nose—is as great as 150 feet per second, so that no physical or chemical aerial disinfectant such as ultraviolet light or germicidal aerosol can prevent projectile or direct droplet infection. Indeed, WELLS, WELLS and MUDD[2] have suggested that the sneeze seems to be a provision of nature for the survival of nasopharyngeal parasites. Obviously, only some system of masking can prevent droplets being thrown out and the mask has already proved its worth in the prevention of streptococcal puerperal sepsis, and, as some believe, in the control of influenza.[3] If the spread of infection in overcrowded shelters is, as seems likely, principally and primarily by droplets, then cheap and efficient masks will be needed, and, what is more important, the public must be educated by propaganda to use them.

MISUSE OF TANNIC ACID

WHEN tannic acid was hailed a few years ago as the perfect dressing for burns there seemed to be no pitfalls to avoid, no circumstances in which its use could prove disastrous. Yet at a meeting of the Royal Society of Medicine last week (reported on p. 621) all speakers agreed that tannic acid must never again be used for burns of the hands and face. The immediate results of treatment may be good in some ways: the coagulum protects the injured area, reduces exudation, and prevents sepsis, but it also produces gross crippling of the hands, and by immobilising or deforming the eyelids endangers the eyes. Rear Admiral C. P. G. WAKELEY, Mr. A. H. MCINDOE and others showed the evolution of these grave end-results by photographs. Tanning of third-degree burns of the hands hinders the already impaired circulation and leads to œdema which, by compressing the vessels to the fingers, causes necrosis of the phalanges. When healing finally occurs the mutilated fingers are dragged backwards by scar tissue and a useless claw replaces what should have been a functioning hand. The results of coagulation treatment on the face may be even more distressing. The eyelids, fixed by horny tan, cannot be moved for a matter of days or weeks; thus in the early stages a damaged eye may be out of reach of treatment, and in the late stages contractures and ectropion leave the cornea exposed to injury and infection which may even destroy sight. These are disasters which must be avoided in future. Mr. MCINDOE would have no third-degree burn, whatever the site, treated by coagulation. On the face and hands such burns must be treated by skin grafts as soon as the granulating surfaces can be suitably prepared. Elsewhere large denuded areas, after saline-bath treatment, can receive pinch or Thiersch grafts. Apart from baths, irrigation is being tried with saline containing electrolytic hypochlorite, run into a Bunyan-Stannard oiled-silk envelope which encases the limb.

1. *Publ. Hlth Rep., Wash.* July 19, 1940, p. 1315.
2. Wells, W. F., Wells, M. W. and Mudd, S. (1939) *Amer. J. pub. Hlth*, **29**, 863.
3. Sanderson-Wells, T. H. *Times*, Oct. 21, 1940.

This method is still in the experimental stage. Baths are painless and overcome sepsis quickly so that the granulating area becomes suitable for pinch or Thiersch grafting. Sulphonamides are also proving useful in the local treatment of infection. In the Navy and R.A.F. a jelly containing gentian violet 1% and Merthiolate 1/5000 has now been substituted for tannic-acid jelly as a first-aid application. It seems urgent to provide a similar first-aid dressing at once for A.R.P. wardens, first-aid parties and others who come into early touch with casualties. At present these workers are instructed and encouraged to apply tannic-acid jelly to all burns, and are supplied with tubes of it as part of their first-aid equipment.

CHEMOTHERAPY INSIDE THE BOWEL

IN their attempts to discover an efficient intestinal antiseptic both the experimentalist and the clinician have so far had to admit defeat. For example, in the pre-sulphanilamide era, GRAHAM [1] tested a large series of antiseptics belonging to the anil and styryl quinoline groups, as well as proflavine, hexylresorcinol and the silver thioglycerol sulphonate which LUMIÈRE claimed had almost sterilised the intestinal contents of a dog. All these preparations were powerfully bactericidal to the colon bacillus in vitro and were relatively non-toxic, yet when they were fed or given by stomach-tube to mice under carefully controlled conditions they produced no appreciable change in the intestinal flora of these animals. With the advent of the sulphonamides fresh attempts were made, but most of the experimental investigations aimed at proving the value of these drugs on mice infected *intraperitoneally* with different members of the salmonella and dysentery groups of organisms.[2] Since these experimental infections in no wise simulated the natural disease the results were little more conclusive than those obtained from the test-tube. Clinically there have been very few reports on the use of the sulphonamides in intestinal infections, although HARRIES, SWYER and THOMPSON [3] claimed some success with sulphanilamide and sulphapyridine in a small series of cases of typhoid fever.

Instead of using insoluble substances MARSHALL and his colleagues [4] in Baltimore have suggested that an intestinal antiseptic should be readily soluble in water but poorly absorbed from the intestine, so as to give a high concentration of the antiseptic in the bowel and a low level in the blood and tissues, a situation somewhat analogous to the use of the sulphonamides as urinary antiseptics. With this objective they prepared a variety of sulphonamide compounds, of which sulphanilyl-guanidine appeared to be the most suitable for further tests. They give a full description of the preparation and chemistry of this substance, and have carried out extensive tests on its pharmacology and toxicity in mice, rabbits and dogs. The drug is poorly absorbed from the gut, and mainly by the small intestine, and the absorbed portion is quickly excreted. Acetylation occurs, as with other members of the series, and the conjugated compound is probably concerned in the toxicity of the drug on the kidney. The authors believe from their tests that the toxicity of sulphanilyl-guanidine is of the same order as that of sulphapyridine or sulphathiazole, and maintain that with reasonable care the risk of toxic effects will be small because so little of the drug is absorbed. It is as effective as sulphapyridine against pneumococcal infection in mice and rather less active than sulphanilamide in experimental streptococcal infection. Its most remarkable property is its bactericidal action on the coliform organisms in the mouse intestine. If this activity extends to the intestinal pathogens the drug may prove most valuable in the treatment of infections localised mainly or entirely to the intestine, such as bacillary dysentery and cholera. In the absence of comparable experimental infections its usefulness may have to be proved by clinical trial.

1. Graham, J. G., *J. Pharmacol.* 1932, 46, 273.
2. Buttle, G. A. H., Parish, H. J., McLeod, M. and Stephenson, D. *Lancet*, 1937, **1**, 681.
3. Harries, E. H. R., Swyer, R. and Thompson, N. *Ibid*, 1939, **1**, 1321.
4. Marshall, E. K., Bratton, A. C., White H. J. and Litchfield, J. T. *Bull. Johns Hopk. Hosp.* September, 1940, p. 163.

LEPROSY AND THE HAMSTER

THE striking resemblances between leprosy and tuberculosis have often been commented on, but the contrasts between these two diseases are no less marked. Chief among these contrasts is the scanty success which has so far attended attempts to culture *Mycobacterium lepræ* in vitro and to reproduce progressive leprosy in other than the human genus. Among the more promising attempts at animal inoculation were those of ADLER [1] who, by implanting small pieces of leprous nodule in two splenectomised Syrian hamsters and later inoculating macerated leprous material intraperitoneally, obtained evidence of multiplication of the bacilli. In one animal, killed a week after the inoculation, he found gross lesions full of bacilli at sites distant from the point of implantation. ADLER demonstrated his results at the Industrial Leprosy Congress at Cairo in 1938, and the impression of many of those present at the congress was that disease similar to human leprosy, progressive at least to a point, had been produced. ADLER has however failed to carry on the disease through a continuous series of hamsters. BURNET [2] in 1938 obtained in 1 out of 6 inoculated hamsters what he considered to be definite signs of progressive disease, the animal being killed four months after a second inoculation with leprous material, given intraperitoneally. The results of these two workers produced at the time considerable hope that an experimental animal had at last been found which would facilitate the study of leprosy.

The experiments of ADLER and BURNET have now been repeated in India on a larger and more prolonged scale by DHARMENDRA and LOWE.[3] They attempted to infect 23 Syrian hamsters (13 of which had been previously splenectomised) with human leprosy material. In 10 the material was inoculated intraperitoneally and in 13 it was implanted in the abdominal wall. Lest climate should prove a determining factor one batch of animals was kept in Calcutta and the other in the comparative cold of a Himalayan hill station. Out of the whole number, 6 died in three weeks and 2 lived eight months; the remaining 15 were killed between the ninth and twelfth months. Slight microscopic lesions and bacilli were found elsewhere than in the implanted nodule in only 2 out

1. See *Lancet*, 1937, **2**, 714.
2. *C.R. Acad. Sci., Paris*, 1938, **207**, 690, and see *Lancet* 1938, **2**, 1306.
3. *Indian J. med. Res.* 1940, **28**, 1.

of the 23 animals, and these 2 animals had died three weeks after inoculation. No lesion apart from that at the site of the implanted nodule was found in animals dying or killed after three weeks, though in 2 of the latter a few bacilli were found (once in a gland and once in the omentum). Bacilli were more often found in animals examined early (3 out of 6) than in those examined later (1 out of 17). In 9 of the 13 animals in which the nodule was implanted in the abdominal wall masses of bacilli were found at the site of implant, but these masses were not larger than those originally introduced. These workers conclude that although bacilli can persist in the implanted nodule for long periods, and although the possibility of their multiplication in such implants has not been disproved, the inoculation of Syrian hamsters by this method or by intraperitoneal inoculation has not been followed by a generalised or progressive infection. They point to the progressive diminution in the number of bacilli found in direct proportion to the length of the period between inoculation and examination, and suggest that the findings of ADLER may have been at least partly due to killing the hamster early; they might have appeared less favourable if the examination had been made later than one week after the last inoculation.

In BURNET'S experiment this explanation is not equally applicable, as in the successful instance the animal was killed four months after the last inoculation. Were the bacilli found in the liver, spleen, and nodes simply carried mechanically from the original site? If so, BURNET asks, why were no bacilli found in the other 5 hamsters; does this not prove that the successful hamster was more susceptible to the disease than the others? It certainly appears to indicate, like the experiments of ADLER and of DHARMENDRA and LOWE, that in some hamsters the bacilli are more slowly eliminated from the body than they are in others. The evidence suggests several points which might be kept in mind by those making experiments in future. For example, the massive concentration of bacilli found in leprous nodules may later give the false impression, when inoculated animals are examined, that the bacilli must have multiplied; lepra bacilli persist for long periods after being inoculated in experimental animals and this persistence varies considerably in different animals. Again dead bacilli may cause local tissue reactions and pathological appearances somewhat similar to those produced by living bacilli. It may be accepted that the only safe criterion of successful inoculation is the passage of the disease through an indefinite series of animals.

SIR ARTHUR MACNALTY'S RETIREMENT

IT is five years since Sir Arthur MacNalty succeeded Sir George Newman as chief medical officer of the Ministry of Health and the Board of Education. They have been momentous years, crowded with urgent problems and historical events, and during them two departments of state have been secure in the knowledge that their health services were in charge of a man with a broad grasp of affairs, a first-hand acquaintance with public-health routine, and a catholic approach to state medicine. The services have had a chief who was always accessible and conciliatory. And the public has had an expositor in simple language of the essentials of healthy living. All who have worked with and under him will remember his friendly personality and will wish him in good measure enjoyment of the kindly fruits of retirement.

Annotations

DEBRIDEMENT

Charles Mayo was once working on a difficult job round the common bile-duct when he was hailed from the gallery: "Say doc, would you settle an argument for us? What is the correct pronunciation, appendicitis or appendiceetis?" Mayo deliberately packed a few swabs down to the site of dissection, laid a sterile towel over the wound, put down his instruments, and turned to his questioner. "You know, doctor," he said, "you have raised a question that has long worried Will, Donald, and myself, so that we had to bring it before a staff meeting last week. After hearing all the evidence on both sides we decided that where the leading symptom is pain in the side the disease is to be indexed as appendicitis, but where the patient first complains of pain in the seat it is to be appendiceetis." The story illustrates two traits of the great Charlie, his contempt for those who worry about words rather than surgical principles, and his ability to administer a rebuke kindly but with complete finality.

Surgery, a neutral by inclination, has been drawn into the world war over the meaning of the term *débridement*. *Débridement* has become a commonplace in the literature of war, and is used almost without thought by British writers. Those who never got beyond estaminet French are apt to think it has something to do with debris, whereas it should mean the removal of a bridle, otherwise the relief of tension. More important than what it ought to mean is what it does mean—how it has been used in surgical literature since it first became an abbreviation for surgical procedure, and in what meaning it serves the most useful purpose. The Napoleonic surgeons used *débridement* in their writings to mean very much what we mean by drainage today, but they used it as part of descriptive language and not as a technical expression. In the last war, after an experience of wound infection that appalled the surgeons of all armies, a technique was evolved that abolished the worst manifestations of sepsis, of which no single word or even single sentence was descriptive. The procedure was in the main excision, but excision with a certain purpose and with definite limits in time and extent. Its purpose could be described as surgical sterilisation of lacerated and contaminated wounds, its time limits as that period varying between 4 and 24 hours in which the bacteria are still confined to the wound track, its limitations in scope as those dictated by the impossibility of sacrificing vital or important structures. This balanced and purposeful excision was denoted *débridement et nettoyage* by Carrel, but other French writers used *débridement* alone, and this practice was adopted by British writers. That interpretation has remained, and later writers on war topics—Trueta in his book on the Spanish war, Mitchiner on air-raids and Ogilvie in our primer on wound infection—have used it without question in that sense. Others, anxious to guide the spate of war literature that threatens to descend on us into its proper channels, are concerned with this misuse of the word, and would have us return to its original meaning.[1] If the meaning of words and the usages of language could be influenced by an appeal to history or fixed by the decisions of authority they would prevail, but the living tongue obeys only those laws that govern the development of all live things, seeking always fresh channels and fresh outlets, growing under the guidance of natural selection. New words and new phrases constantly arise and old ones take on new meanings. Words taken from the speech of other nations acquire a new sound and an altered significance. Whether innovations remain or not is decided not by

1. See correspondence columns of the *British Medical Journal*, Sept. 28–Nov. 9, 1940.

professors of language in conference but by the whims of the man in the street, not because their derivation is impeccable but because they do their job better than their predecessors. So it must be with *débridement*. If it means relief of tension, as undoubtedly it does or rather did, do we need it at all? Is one long French word better than three short English ones? Does it say anything new or describe anything old more clearly, more concisely or more beautifully? If on the other hand it means all the steps of surgical wound sterilisation elaborated in the last war and practised, possibly with modifications, in this, as it undoubtedly did to the surgeons who developed that technique and to the majority of those who use it today, it becomes a useful and indeed an indispensable word. It saves time in writing and unnecessary repetition of technical details to those who are already familiar with them.

These points will be settled eventually by the consensus of surgical opinion, and settlement will come easier and sooner if we admit that the word is no longer French, but has become part of the vocabulary of British surgeons. Let us remove the accent and drop the italics. As debridement it is our word, one that we can pronounce as we like and use to convey the meaning for which it is most needed without reference to the dictionary.

ORIGINS OF HEADACHES

Penfield[1] originally followed up the work of Foerster and others who have studied the mechanism of headaches by stimulating the exposed brain, dura, and intracranial blood-vessels and noting the resulting sensations. Now, with McNaughton[2] he has investigated the anatomical background of his previous clinical and experimental observations. He found that the brain itself and the intracerebral blood-vessels were insensitive, but that the walls of the dural sinuses, the large intracranial arteries, and some areas of the dura were extremely sensitive. Pain produced by dural distortion—that, for example, due to pressure upon the falx and tentorium—was referred to a distance from the point of stimulation, while stimulation of the larger arteries caused local pain. Some areas of the meninges were more sensitive than others—for instance, stimulation of the posterior third of the falx caused severe pain, and the walls of the sinuses and points of entry of veins had a much greater sensitivity than the rest of the dura. Whether pressure, traction, heat, or electricity were used as stimulants the resulting pain had always the same quality; it was, in fact, a headache, and was sometimes accompanied by nausea, vomiting and restlessness. The reference of the headache following local stimulation was usually ipsilateral, but was often far removed from the point of stimulation. For instance pressure upon the tentorium or upon the posterior part of the falx caused a frontal headache. The reference of this pain is explained by the anatomy of the nerve-supply of the cerebral dura mater, which is all, except for that in the posterior fossa, supplied by the trigeminal nerve. Fibres from the second and third division, and sometimes from the first, pass up with the middle meningeal artery to supply the lateral cranial walls, while the superior longitudinal sinus and falx are innervated mainly by the ophthalmic division via the tentorial and anterior ethmoid nerves. The tentorial nerve also supplies the superior wall of the transverse sinus, but its inferior surface and the dura of the posterior fossa receive a nerve-supply from the vagus, and also perhaps from the ninth and tenth cranial nerves. Although much of this area is very sensitive, nerve-endings are difficult to find, and their number varies from case to case. This may explain the wide individual variation found in the sensitivity of these structures.

1. Penfield, W. *Ass. Res. nerv. ment. Dis. Proc.* 1935, **15**, 399.
2. Penfield and McNaughton, F. *Arch. Neurol. Psychiat.* July, 1940, p. 43.

Penfield and McNaughton also describe a series of cases where pain related to dural scars or deformity was relieved by denervation of the dural sinuses or by section of the appropriate division of the trigeminal nerve. They conclude that although headaches have been attributed variously to irritation of the dura, the meningeal and cerebral arteries, and the ventricular walls, the dura with its sinuses and tributary veins is the commonest site of origin. They suggest that treatment of intractable headache should not be abandoned until the pain mechanism has been studied in each case, and radical treatment has been undertaken to remove the local cause or, if necessary, to section the appropriate sensory nerves.

EXTERNAL HYSTEROGRAPHY

FOR many years obstetricians have been studying the action of the uterus in labour both from a physiological and a pathological standpoint. Most of this work has been done by careful clinical observation, but from time to time the aid of scientific recording instruments, of greater or less accuracy, has been invoked. The first hysterography studies are credited to Schatz[1] who introduced into the uterus a small rubber bag of 80 c.cm. capacity connected to a revolving drum. Chassar Moir[2] used this method to assess the action of the ergot alkaloids on the uterus, and thereby established the value of ergometrine. This internal method, has, however, four major disadvantages. First, it is a foreign body, and like any foreign body introduced into a hollow viscus may set up unnatural contractions. Secondly, any foreign body introduced into the upper reaches of the birth-canal must, no matter how skilful the operator and how ideal the aseptic ritual, carry with it at least a small risk of infection. Thirdly, its introduction needs an anæsthetic which may itself influence uterine behaviour. Lastly, the use of internal apparatus requires an elaborate technique of sterilisation, skilled assistance and attention. These manifest disadvantages have led to the increasing use of an apparatus which is entirely external, first devised by Schaffer in 1896. This method is not ideal, since the record must take into account various extraneous movements such as abdominal respiratory excursions, aortic pulsation transmitted through the uterus, vomiting, and in fact any movement of the patient; but these superimposed tracings are easily distinguished from the orderly sequence of the uterine contractions. A levered cork hammer is applied to the maternal abdomen by means of a circular base which carries a pneumatic chamber; the hammer is connected to a rubber diaphragm in the pneumatic chamber, so that any excursion of the hammer is interpreted via a recording tambour on a smoked drum. When the uterus contracts the anteroposterior diameter of the uterus and the abdomen increases; this results in an upward deflection of the hammer and compression of the air in the closed system, producing an upward stroke on the drum. The whole apparatus is light and rides comfortably on the patient, who is thus permitted a fairly wide range of normal movements. Mostyn Embry[3] has used this method to illustrate the effect of various drugs, notably in cases of inertia. He finds that gas administered by Minnitt's apparatus does not depress uterine contractions but enhances the intensity of individual contractions and increases the tone of the uterus; even when administered in concentrations sufficient to produce anæsthesia it has little or no depressant action. Ether used as an analgesic does not depress uterine action or retard labour, but when pressed to the point of anæsthesia the intensity of contraction is lessened and the interval between contractions is lengthened in direct proportion to the depth of the

1. *Arch. Gynaek.* 1872, **3**, 58.
2. *Proc. R. Soc. Med.* 1935, **28**, 1654.
3. *J. Obstet. Gynæc.* August, 1940, p. 371.

anæsthesia. Chloroform in small doses has the same effect as ether, but in larger doses acts as a more powerful and complete uterine depressant. Bromide and chloral, he finds, have no effect on uterine action and any improvement in the action of the uterus after their use he attributes to their sedative effect on the higher centres. Morphine acts in the same way except that 15 min. after the injection of gr. ¼ there is a slight but noticeable diminution in the intensity and frequency of the contractions; this is a transient phenomenon, lasting only 30 min. at most, and not influencing the subsequent behaviour of the uterus. The action of morphine with scopolamine is the same as that of morphine only. He also investigated the oxytocic drugs and found that quinine in gr. 10 doses is an unreliable stimulant. In four patients on whom tracings were secured only one showed improved contractions. Pituitrin on the other hand has a dramatic effect on the parturient uterus; acting rapidly, it increases the power, frequency and duration of the contractions, but relaxation between contractions is incomplete; in other words, a state of partial tetany is induced. The duration of this action is about 30 min. even with small doses of 2½ units. These hysterographic studies of the effects of pituitrin once again confirm the grave dangers of its indiscriminate use, the gravest being that of rupture of the uterus. Hysterography failed to show any demonstrable difference between pitocin, the separated oxytocic principle of pituitrin, and pituitrin itself. Thymophysin is variable in action, and shows no particular advantages over pituitrin. Œstrin and acetylcholine have a variable effect on the parturient uterus: in some cases a definite increase in contractions results quite soon after their administration, though this is never so dramatic as after pituitrin. Embrey's work confirms some and repudiates others of our established theories of uterine behaviour in labour, and the action of stimulant and depressant drugs on the contracting uterus. Hysterography should provide a reliable measure of old and new therapies.

ANTISCORBUTICS

ANIMAL tissues are valuable sources of the fat-soluble vitamins, but, with a few exceptions of secondary practical importance, plant tissues are essential to man for his supply of vitamin C. It is a fallacy, however, to consider that all plant tissues are equally important antiscorbutics, and consideration of tables such as those compiled by Boas Fixsen and Roscoe[1] reveals the great variation in vitamin-C content of various fruits and vegetables. The negligible amount of the vitamin in plums, pears and melons is in striking contrast to the high concentrations found in many other fruits and vegetables. Citrus fruits have been accepted for some long time as valuable antiscorbutics, but it was not until 1936 that it was shown[2] that black-currants were three or four times as potent as orange juice. Two-thirds of an ounce of black-currants will provide the entire estimated daily dosage of 50 mg. of ascorbic acid. The strawberry also now ranks with the citrus juices and is approximately twice as rich as the tomato. Alongside this revision in the scale of accepted antiscorbutic values other false impressions have been corrected as the result of recent investigations. Vitamin C was once regarded as a luxury vitamin restricted to those who could afford the more expensive fruits. But price and antiscorbutic value do not necessarily run side by side and about 1½*d.* a day spent on properly chosen foods will supply the normal requirements of vitamin C.[3] Another common fallacy was that cooking and canning of fruits and vegetables destroyed most if not all the vitamin C present. Workers throughout the world—Kohman and Tressler in America, Lunde and Mathiesen in Norway, and Olliver in England—have disproved this theory. During cooking a proportion of the vitamin is extracted from the tissues into the liquid but the actual destruction is relatively small. Cooked, but not overcooked, vegetables such as brussels sprouts, cauliflower, cabbage, and spinach are among the most valuable antiscorbutics but it is a pity more use cannot be made of the despised water they have been cooked in. These new findings, which are of the utmost importance in time of war when the nation has to be fed on a restricted food-supply, are based on a mass of experimental work mainly accumulated during the past five or six years. As the *Journal of the American Medical Association*[4] points out, these many observations have only been made possible by the perfection of rapid chemical methods for estimating the vitamin, and the importance of the work of Tillmans, Harris, and others, by which a simple 30-minute test can be substituted for a laborious three to four weeks' biological assay, cannot be overestimated.

1. Boas Fixsen, M. A. and Roscoe, M. H. *Nutr. Abstr. Rev.* 1937, **7**, 823.
2. Olliver, M. *J. Soc. chem. Ind., Lond.* 1936, **55**, 153T.
3. Olliver, *Lancet*, 1940, **2**, 190.

POLIOMYELITIS OF MICE AND MEN

IT is too early to attempt to classify animal viruses with the precision applied to bacteria, but it is possible to place them in groups. These include the vaccinia-variola group, the Castaneda-positive group (made up of the viruses of psittacosis, trachoma, inclusion conjunctivitis and lymphogranuloma venereum), the influenza group and so on. It may now become necessary to speak of a poliomyelitis group. In 1934 Theiler[5] while working in New York on the effects of the neurotropic yellow-fever virus in mice noted that a few uninoculated mice from an apparently normal strain showed symptoms of a flaccid paralysis of the hind legs. From the brains of these mice a virus was isolated which is similar in size to the poliomyelitis virus and like it gives rise to lesions which affect especially the cells in the anterior horn of the cord.[6] A number of strains of this virus have been isolated not only in America but in Germany, Japan and Palestine. Olitsky[7] has now found that the same virus is carried in the intestines of a high percentage of normal mice in America, although few develop nervous symptoms. From the intestine the virus can be traced, according to Theiler and Gard,[8] through the intestinal wall to the mesenteric glands. Monkeys are resistant and do not develop immune bodies after inoculation with the mouse virus nor is there any serological relationship between it and human poliomyelitis virus. These observations might appear to have little bearing on human pathology were it not for the discovery by Armstrong[9] that the Lansing strain of human poliomyelitis virus is transmissible to the Eastern cotton-rat, *Sigmodon hispidus hispidus*, and to the mouse by intracerebral injection. The lesions in these species closely resemble those found in the monkey (Lillie and Armstrong[10]). After passage through the cotton-rat the Lansing virus was shown by Peers[11] to have undergone no change in its pathogenicity for the rhesus monkey; and Haas[12] found that 57 of 83 human sera possessed immune bodies to this virus, as judged by the reaction in mice, whether or not the donors of the serum had a clinical history of poliomyelitis. The susceptibility of the Eastern cotton-rat to the Lansing strain of human poliomyelitis was confirmed by Toomey and Takacs,[13] who also infected the closely allied species, *Sigmodon hispidus littoralis*. They were

4. 1940, **115**, 863.
5. Theiler, A. *Science*, 1934, **80**, 122.
6. Theiler, *J. exp. Med.* 1937, **65**, 705.
7. Olitsky, P. K. *Ibid*, 1940, **72**, 113.
8. Theiler and Gard, S. *Ibid*, pp. 49 and 79.
9. Armstrong, C. *Publ. Hlth Rep., Wash.* 1939, **54**, 1719 and 2302.
10. Lillie, R. D. and Armstrong, *Ibid*, 1940, **55**, 718.
11. Peers, J. H. *Ibid*, p. 726.
12. Haas, V. H. *Ibid*, p. 1061.
13. Toomey, J. A. and Takacs, W. S. *Proc. Soc. exp. Biol., N.Y.* 1940, **43**, 536.

unable to infect cotton-rats with nine other strains of human poliomyelitis virus. Jungeblut and Sanders,[14] however, injected cotton-rats with monkey material infected with five different strains of poliomyelitis. Of two cotton-rats injected with the SK Los Angeles strain, one died a week later with no observable lesions, but injection of its brain into another cotton-rat caused flaccid paralysis on the sixth day. The brain of this cotton-rat contained a virus pathogenic for mice. Monkeys immunised with the mouse-passage virus were immune to the SK strain of poliomyelitis virus. As a result of further work Jungeblut and Sanders [15] have found that the mouse-passage virus possesses only limited pathogenicity for the rhesus monkey, since it does not give rise to paralysis. It can, however, be recovered in active form from the central nervous system of the monkey and its presence there seems to interfere with the propagation not only of the SK but also of the Aycock monkey poliomyelitis virus. The interference phenomenon is analogous to that which occurs between yellow fever and Rift Valley fever in the mouse.[16] These results become increasingly significant in view of the fact that one of their strains of mouse "poliomyelitis" virus has been proved by Theiler and Gard [8] to be pathogenic for the cotton-rat; and mice infected with the virus of mouse poliomyelitis become resistant to a subsequent intracerebral inoculation with the Lansing strain of human poliomyelitis virus. It may therefore be said that most human poliomyelitis viruses are pathogenic only for man and monkey; two, the Lansing and SK strains, are in addition pathogenic for cotton-rats and mice. Most mouse poliomyelitis viruses are pathogenic only for mice but one strain is pathogenic also for cotton-rats. Human and mouse viruses give rise to similar lesions; the mouse virus has been found in the intestines of mice and there is increasing evidence that in the same way the human poliomyelitis virus remains for considerable periods in the intestines of man. The crucial question is the exact status of the Lansing and SK strains of poliomyelitis virus. Are they human viruses that have become pathogenic for mice or mouse viruses that have become pathogenic for man?

THE SHIPBUILDERS

IN Tyneside some of the loveliest country in England has been covered with drab and planless streets and fine human material, valued in two wars, has been allowed to suffer and waste in the interval between them. In a new survey [17] Mr. D. M. Goodfellow, Ph.D., shows that though there have been improvements in the past ten years, including recent housing schemes, in 1935–37 Tyneside had an infant-mortality rate 40% higher than that of England and Wales as a whole, and a tuberculosis death-rate more than 50% higher. Tyneside has suffered from three curses. The first has been its dependence on three main industries which have been simultaneously depressed. The second is its geographic isolation; social work there has never had the stimulus of a better record in a neighbouring and competing area, and the rest of the nation has been largely ignorant of conditions in Tyneside. The third is the obsolete and incoördinate distribution of its local-government areas which are comprised in four county boroughs, two municipal boroughs, eight urban districts and parts of two counties. Dr. Goodfellow, who is a native of the area, has been assisted in this survey by members of two Workers' Educational Association tutorial classes. He remarks that "though mankind is our proper study we have as yet studied metals and their stresses with infinitely more devotion." Some might say that our attention to the stresses of metals has brought us to a pretty pass today. Our greatest failure towards the distressed areas has been lack of that constructive enthusiasm which Tynesiders themselves have applied to building the *Mauretania* and the Tyne Bridge, and which the country as a whole has achieved in war production. When we have the will to apply the same drive to poverty, ill health and unemployment we shall be able to make the kind of evils described by Dr. Goodfellow as obsolete as the stunted factory children of a hundred years ago.

14. Jungeblut, C. W. and Sanders, M. *Ibid*, 1940, **44**, 375.
15. *J. exp. Med.* October, 1940, p. 407.
16. Findlay, G. M. and MacCallum, F. O. *J. Path. Bact.* 1937, **44**, 405.
17. Tyneside: The Social Facts. Newcastle-upon-Tyne: Co-operative Printing Society. Pp. 80. 1*s*.

Sir WILSON JAMESON who succeeds Sir Arthur MacNalty as chief medical officer will relinquish for the purpose his threefold rôle of dean of the London School of Hygiene, professor of public health in London University, and adviser to the Colonial Office. Sir Wilson, who is 55 years of age, is a native of Perth and after graduation at Aberdeen came to London where he combined public health teaching with field work in Hackney, Stoke Newington and Marylebone, finally becoming M.O.H. for Hornsey and Finchley. Meanwhile he was called to the bar. In 1929 he was appointed to the university chair as director of public health at the Keppel Street school, and two years later succeeded Andrew Balfour as dean. His name appeared last year in the list of New Year honours.

It has been found necessary to close the museum of the Royal College of Surgeons in Lincoln's Inn Fields until further notice. As a considerable number of the staff are in the Services, new specimens cannot be mounted and placed in the collection. Those who wish to present specimens to the museum should retain them for the present in their possession, notifying their intention to present them at a later date. The conservator will be glad to give advice about preservation and storage. In the meanwhile, in order to retain their colour specimens should be preserved in Kaiserling I solution. The colour of specimens preserved with formalin alone cannot be restored.

The next session of the General Medical Council will open on Tuesday, Nov. 26, when the president, Mr. H. L. Eason, will take the chair at 10 A.M.

Dr. W. RUSSELL THOMAS has been chosen as Liberal National candidate for Southampton in place of Lord Reith. Dr. Russell Thomas, who is a barrister-at-law at Lincoln's Inn, qualified from Cambridge and Guy's in 1919.

Sir JOHN MAUDE becomes secretary of the Ministry of Health in succession to Sir George Chrystal, retiring on reaching the age limit.

The death in London on Nov. 10 of Mr. C. W. MANSELL MOULLIN, consulting surgeon to the London Hospital, is announced. He was in his ninetieth year.

ALIEN DOCTORS AND NURSES.—Doctors, students and nurses of German, Austrian or Italian nationality may now be employed in E.M.S. hospitals in unprotected areas provided certain safeguards are observed. Permits of employment from the Aliens War Service Department must still be obtained but they will usually be readily granted. Aliens should not be employed in wards set aside for service patients, and wherever possible they should be employed in wards where British doctors and nurses are also working. The number of aliens employed at a hospital should not exceed 10% of the staff (or 20% in hospitals of less than 100 beds). If a serious military situation should arise the authorities may order their immediate removal from the hospitals.

The 1941 edition of the Warner Diary-Calendar of Medical History is now ready and Messrs. W. R. Warner (Power Road, Chiswick, W.4) tell us that a copy will be sent to any doctor who writes for one. This year no diaries can be sent abroad.

Public Health

The Trend of Measles

IN a study of mortality in the first seven months of the war one of the interesting observations made by Stocks [1] was the sudden break in the regular sequence of epidemics of measles. In London, Manchester and Liverpool there is normally a biennial periodicity in the appearance of the disease and an outbreak was to be expected in the December and March quarters of 1939–40. In each city, as fig. 1 shows, it failed to materialise. For instance, in London the deaths in these two quarters were 413 in 1931–32, 513 in 1933–34, 221 in 1935–36, 137 in 1937–38, while in the intervening years they were annually less than 20. In 1939–40 instead of the expected high figure there was only 1 death; while in Manchester there were only 2 deaths compared with 83 in 1937–38 and 188 in 1935–36 and in Liverpool only 1 in comparison with 215 and 213. Stocks suggests that the factors most likely to be responsible were evacuation of the school population and school closure and thinks the latter the more important of the two since, when the epidemic was due to begin, child-density was not greatly below normal. The trend of measles in the three towns, since his study was made, is interesting. In all three the number of deaths has remained remarkably low. In London in the second quarter of this year there were none at all compared with 96 in the same quarter of 1938, 348 in 1936 and 375 in 1934. In the third quarter there were 4 compared with 12, 27 and 18 in the three previous years of prevalence. Notifications in the three cities (see fig. 2) also show that the incidence has remained consistently low though there is a hint of a possible epidemic in the final returns. In Liverpool and Manchester the deaths have also been relatively few in the second and third quarters of this year, but have recently tended to exceed those normally recorded in the epidemic years. The cause is not far to seek. Unlike London they have experienced, as their notifications show, delayed epidemics. In Manchester the peak expected at the turn of the year did not materialise until the beginning of August when the incidence is normally at its minimum. The rise set in at about the end of April. In Liverpool much the same trend is apparent, though the epidemic is not yet so clearly on the decline. But the deaths have kept relatively low and the epidemic in Manchester is reported to have been of a milder character than usual.[2] In the summer months secondary infections may be less prevalent and an epidemic at this time of year may be less dangerous. After the present wave the two northern towns may well escape trouble this winter. The trend in London will be watched with interest.

FIG. 1

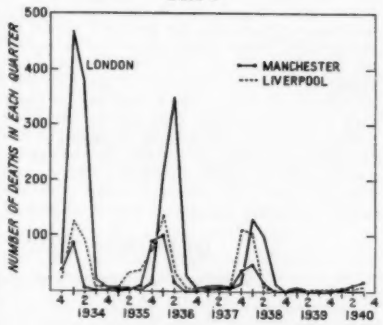
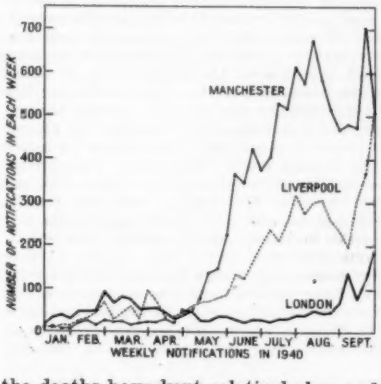


FIG. 2



1. Stocks, P. *Lancet*, 1940, **1**, 725. 2. *Manchester Guardian*, Oct. 4.

Infectious Disease in England and Wales

DURING THE WEEK ENDED OCT. 12, 1940

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 2019; whooping-cough, 1373; diphtheria, 1336; enteric fever, 57; measles (excluding rubella), 9905; pneumonia (primary or influenzal), 660; puerperal pyrexia, 145; cerebrospinal fever, 116; poliomyelitis, 30; polio-encephalitis, 1; encephalitis lethargica, 3; dysentery, 69; ophthalmia neonatorum, 77. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct. 18 was 1454, including: scarlet fever, 282; diphtheria, 255; measles, 428; whooping-cough, 43; enteritis, 72; chicken-pox, 96; erysipelas, 41; mumps, 7; poliomyelitis, 1; dysentery, 4; cerebrospinal fever, 27; puerperal sepsis, 9; enteric fevers, 16; german measles, 3; other diseases (non-infectious), 78; not yet diagnosed, 92.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 2 (0) from scarlet fever, 11 (1) from whooping-cough, 13 (2) from measles, 34 (0) from diphtheria, 49 (5) from diarrhœa and enteritis under 2 years, and 15 (1) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 8 fatal cases of measles and 5 of diphtheria. Birmingham and Liverpool each had 7 deaths from diarrhœa.

The number of stillbirths notified during the week was 221 (corresponding to a rate of 33 per thousand total births), including 23 in London.

From the Annual Reports

In reviewing the annual reports of the medical officers of health of the metropolitan boroughs we must take account of the strange system of public-health administration in which they work, the artificial nature of the units they control, and the limitation of their powers to fragments of functions.

Chelsea is one of the smallest metropolitan boroughs, with a resident population of 55,400. Its population is selected, consisting of an undue proportion of professional people and their servants. Dr. W. H. Leslie McCarthy gives the birth-rate for 1939 as 9·7 and the death-rate as 14·6. These are crude rates and would indicate that the population is becoming rapidly exterminated if Chelsea were self-contained. The infantile mortality was 33 which is extremely low, especially as 10% of the babies were illegitimate. The number of births accredited to the borough was 539, but only 484 were reported as having been born there, of which only 101 were notified by midwives. The deaths numbered 743, of which 246 were due to heart disease, 93 to other circulating diseases and 103 to cancer. The deaths from acute infections were: diphtheria 3, influenza 20, encephalitis lethargica 1, cerebrospinal fever 2. Tuberculosis caused 51 deaths, over 1 per 1000 of the population appropriate for the calculation of the death-rate (50,890). This is a very high incidence considering the composition of the resident population, but it must be remembered that Chelsea contains a large proportion of serving maids and shop assistants who are specially prone to fatal tuberculosis. The cost of the supply of milk to mothers and children was £945 or £1 16*s.* per child born. Many of the infants would be of wealthy parents, so that the supply of milk to those who need it appears to have been good. Diphtheria was somewhat prevalent in 1939 with 65 notifications, but not severe since it caused but 3 deaths. The immunisation clinic dealt with 241 new cases in 1939. This is less than half of the number of births in the borough, but is not unsatisfactory for London which is far behind in this measure of prevention; it must be remembered, too, that the borough is not responsible for the immunisation of children attending school.

Messrs. Savory and Moore (London, N.15) have reduced the price of their Moryl brand of carbaminoylcholine chloride (carbachol).

Parliament

EVENTS move swiftly in these days, and public opinion moves with them. The whole-hearted support which the present Government enjoys in all quarters of the House of Commons is as great as ever, and Mr. Churchill's popularity never stood higher. Nevertheless there is an underlying feeling of restlessness which found expression this week in the debate which followed the Prime Minister's review of the war situation. Mr. Churchill had little to say which was not already generally known, in essence at any rate, but he spoke with his accustomed brilliance. Running through his speech there was a note of sober confidence, combined with a strong reminder of the difficult tasks ahead, and the time which may be required for their final accomplishment. He found the course of events at home neither unexpected nor on the whole unsatisfactory. Hitler had been thwarted in his malicious purpose of razing our cities, and while popular activity had not been seriously interfered with by the blitzkrieg little damage had been done to our munitions and aircraft production. None of the services upon which the life of our great cities depends—water, fuel, electricity, gas, sewerage—had broken down. Much damage had been done to property, but the civilian casualties were relatively light—14,000 killed and 20,000 injured—nearly four-fifths of them in London. Even these figures looked large compared with the Service casualties—300 soldiers killed and 500 wounded. Mr. Churchill pointed to the signs of the diminishing scale of the enemy's air attack. In the first week of intense bombardment in September there were 6000 casualties and in the last week of October only 2000. There were other reasons besides weather for this diminution of the violence of the attack; it was believed that other things were going on which would play even a greater part in defeating the enemy tactics as the months passed.

Mr. Churchill did not disguise the seriousness of our recent shipping losses from U-boat action, and he deplored the fact that the use of the southern Irish ports were withheld from the British Navy for the protection of allied vessels in the Atlantic approaches. But it was encouraging to know that we have still nearly as much shipping tonnage as we had at the beginning of the war. Although the sea and the air would be the main elements of our war effort a powerful army would be necessary, which could intervene as the war proceeded to liberate one or other of the countries who were yearning to throw off the Nazi yoke. While not denying the extent of our difficulties in the Middle East as a result of the defection of France, Mr. Churchill assured the House that the balance of forces on the Egyptian frontier and the Sudan was far less unfavourable to us than it was at the time of the French collapse. As to the new theatre of military operations opened up by the Italian attack on Greece, the Prime Minister promised that we would do our best to support our latest ally.

In the debate which followed members allowed themselves a wide latitude in their criticism. Irrespective of party there was a strongly expressed demand for a more vigorous use of our power, particularly against Italy. Many members also pressed for action being taken to secure the use of the southern Irish ports for the British Navy.

* * *

The Duke of Devonshire, Under Secretary for India, has presented a bill in the House of Lords providing for the payment of compensation for disablement benefit in the case of male workers who died from or became totally disabled or permanently incapacitated as a result of the respiratory disease of byssinosis.

The Prolongation of Parliament Bill, which has already passed the House of Commons, has received a second reading in the House of Lords.

Means Test

Mr. WINSTON CHURCHILL, Prime Minister, made the following statement: The Government intend to introduce legislation to enable them to give effect to certain changes designed to remove causes of complaint against the existing means test. The test will become one of personal need, and will be based on the following principles. The needs and resources of the applicant will continue to be aggregated with those of his wife and of any dependants, but the resources of any other member of the household will no longer be aggregated with those of the applicant. If the applicant is the householder, a standard contribution by non-dependent members of his household towards rent and other overheads will be assumed and taken into account as part of the applicant's resources. This means that inquiry will normally be limited to the needs and resources of the applicant, his wife and dependants. If the applicant is not a householder, and is living with relations, regard will be had to the constitution and circumstances of the home in assessing his personal needs, but inquiry into the resources of other members of the household will in any case be greatly reduced and will often be unnecessary. No applicant without resources of his own will be left dependent on other members of the household for means to buy clothing and other necessary personal requirements. The Government have asked the Assistance Board to work out the detailed application of these principles in the case both of unemployment assistance and of supplementary pensions in order that they may be in a position to submit draft regulations as soon as the necessary legislation has been passed.

QUESTION TIME

Horder Committee's Report

In answer to a question Miss E. WILKINSON, under-secretary to the Ministry of Home Security, said: Lord Horder's committee was appointed by the then Minister of Home Security and the Minister of Health, on Sept. 14, 1940, and presented an interim report within a few days. Since then the committee has continued to sit and the Ministers have now received a further report bringing the account of their investigations and findings up to date. The recommendations of their interim report were accepted, and action is being taken upon them. This also applies to some of the recommendations in the further report; the others are now under consideration. Now that both reports are completed, the Home Secretary proposes, with the agreement of the Minister of Health, to publish the recommendations of the committee.

Home Guard Casualties

Mr. J. E. GROVES asked the Secretary of State for War whether he was aware that certain local medical war committees had informed general medical practitioners that they were required to provide the essential first-aid treatment of battle casualties and injuries sustained by members of the Home Guard while on duty without fee; when and by whom was the suggestion initiated; did the proposal involve the free supply of drugs, dressing and appliances, the doctor proceeding at his own expense to the casualty, with his instruments and equipment, or would the casualty be brought to the doctor; the free treatment of casualties who were other doctors' patients; and free treatment for casualties resulting from an attempted invasion by the enemy.—Sir E. GRIGG replied: A letter was received from the Central Medical War Committee last July offering the services of the medical profession throughout the country, free of charge, for attendance on members of the Home Guard who sustain casualties while on duty, the arrangements being made through the Central Committee and its local committees. This offer was gratefully accepted by the War Office, and the Central Committee was invited to place its local organisations in touch with each of the Territorial Army county associations. The offer is understood to include the free supply of such drugs and dressings as the doctor may have available for the first-aid treatment of the patient, and the circumstances in which the doctor would be called upon to render assistance would be similar to those in which emergency medical treatment is obtained from a doctor in the case of ordinary accidents.

N.H.I. and Prisoners of War

Mr. F. J. BELLENGER asked the Minister of Health what was the position with regard to contributors under National Health Insurance Acts who were prisoners of war; and

would he say whether such members of approved societies were fully protected as to benefits during the period they remained prisoners of war.—Mr. M. MACDONALD replied: If an insured person is taken prisoner of war whilst serving in the forces his rights to health-insurance benefits are not affected in any way by the period of his imprisonment. If a person not serving in the forces is taken prisoner whilst insurably employed he will normally under the existing law remain insured for a period on average of 21 months from the date of cessation of his employment. Accordingly it has not so far been necessary to make any special provision for safeguarding the rights of persons within this category.

Physical Fitness of Service Recruits

Mr. RHYS DAVIES asked the Minister of Labour whether the standard of physical fitness of men entering His Majesty's forces during the present conflict was as good or better than between 1914–18; and whether any improved standard was due to the extension of the social services.

Mr. ERNEST BEVIN: Figures for the whole period 1914–18 are not available; but a comparison of the results of the medical examination of men under the Military Training and National Service (Armed Forces) Acts with those of the examination of 2,500,000 men for entry into the Armed Forces during 1917–18 suggests that there has been a very definite advance in the standard of physical fitness in the intervening period. I have no doubt that the extension of the social services has been an important factor in this improvement.

Prevention of Tetanus in the Army

Dr. A. V. HILL, F.R.S., asked the Secretary of State for War if he could now give the results of the new inoculation introduced into the Army for the prevention of tetanus, and the use of the T.A.B. vaccine in protecting the soldier from typhoid-paratyphoid infection; what proportion of the Army had accepted inoculation; whether the British Army was the only one in which immunisation against typhoid was not universal; and how much, on the basis of recent experience, the chance of a soldier's contracting typhoid or paratyphoid was increased by refusing protection.—Mr. R. K. LAW, financial secretary to the War Office, replied: In no case has tetanus been reported in wounded soldiers who had received protective inoculation. All the cases reported have occurred in non-immunised men. With regard to the T.A.B. inoculation, the reported incidence of proved infections of typhoid and paratyphoid fevers in the whole of the British Expeditionary Force and the Home Forces, from the outbreak of war to the present time, has been 32 cases, 26 of which have never received T.A.B. vaccine. About 80% of the Army accepted inoculation. In no other army is typhoid immunisation not universal. On the basis of the figures I have given, the chance of contracting typhoid or paratyphoid fever is increased roughly 17 times by refusing inoculation.

Preventive Measures for Civilians

Dr. A. V. HILL asked the Minister of Health whether, in view of possible epidemics of typhoid and paratyphoid, means and material were available for widespread inoculation in regions likely to be affected: and, in view of the fact that the commonest source of such infection was from workers employed in connexion with food- and water-supplies, he would make provision for all such workers to be protected without delay.—Mr. M. MACDONALD replied: Means and material are available for extensive inoculation of the population of particular localities if they should be placed at special risk. I have looked into the particular suggestion in the second part of the question and I am advised that the action suggested would not have the effect of protecting the consumer against infection. I have just sent a circular to local authorities drawing their attention to certain other measures which would reduce risks of infection.

Dr. HILL asked the Home Secretary whether, in view of the successful results of the new inoculation of the Army against tetanus, it would now be possible to offer the same protection to the police, the fire services, and air-raid precaution workers in general.—Mr. H. MORRISON replied: This matter was carefully considered by my department and the Ministry of Health some time ago and the conclusion was reached that, for a variety of reasons, special measures of advance immunisation against tetanus should not be extended to the services mentioned. I am advised that the normal method of inoculation after a person becomes a casualty affords an adequate safeguard against any risk of tetanus.

Mr. R. W. SORENSEN asked the Minister of Health whether he would recommend to, or instruct, local authorities in control of public shelters used for sleep at night to make available in all such shelters supplies of antiseptic and medicinal tablets or pastilles for free distribution with a view to minimising ailments and infection.—Mr. MACDONALD replied: The medical aid posts at the larger shelters will be equipped with appliances and drugs based on a schedule recommended by the committee over which Lord Horder presides. This schedule includes some medicinal tablets.

Health Commissioner for London

Mr. K. LINDSAY asked the Home Secretary whether, in view of the importance of speedy executive action, he would now appoint a health commissioner for the London region with full powers.—Mr. MORRISON replied: I have been in consultation with the Minister of Health on this suggestion and we are satisfied that the problem can best be handled by the existing organisation both central and local, and that the appointment of a health commissioner is not necessary.

Night Employment

In reply to Mr. DAVID ADAMS Mr. ERNEST BEVIN, Minister of Labour, said special inquiries had already been instituted as to whether the more extensive night employment of youths between 16 and 18 under war conditions was producing ill health or undue fatigue. The matter would continue to be closely watched and if ill effects were found to be resulting appropriate action would be taken.

Psychiatrists and Service Patients in Mental Hospitals

Mr. RHYS DAVIES asked the Minister of Health whether he was aware that psychiatrists employed as civilians in mental hospitals were not allowed to treat patients in the same hospitals who were members of His Majesty's forces, and that neurosis cases arising in the forces were therefore, sometimes, neglected; and would he arrange with the service departments to remove this anomaly.—Mr. MACDONALD replied: I have no knowledge of the difficulties to which the hon. member refers, which seem to be contrary to my own information. If he will furnish me with instances I will go further into the matter.

Surgeon Detained

Sir ERNEST GRAHAM-LITTLE asked the Home Secretary whether he would consider the release, under such conditions as he might wish to impose, from detention in Brixton prison, of the surgeon to whom his attention was drawn on Oct. 17, in view of the representations made by some eminent members of the medical profession who had intimate knowledge of his activities, and in view of the inconvenience suffered by three important London voluntary hospitals, of the honorary staff of which this surgeon was an active member.—Mr. MORRISON replied: This case is to be reviewed by the advisory committee who will take account, amongst other things, of any representations made on behalf of the appellant.

SHOCK CAGES—The most junior nurse knows that the shocked patient must be warmed up; and she has been religiously warned against burning him with hot bottles. The Medical Supply Association has provided a convenient device, the Restor shock cage, which will bring him to the appropriate temperature and keep him there. It is made of wire in the shape of an ordinary bed-cradle, and is fitted on the inner side of the arch with two electric bulbs of the carbon-filament type. These are separated from the patient by a small wire cage of their own. The lamps can be connected with a wall plug by 9 feet of flex; when out of use the flex can be coiled neatly at the side of the cage over double hooks, and cages can be stored one above the other in nests. There is a safety fuse in the heat-units circuit which gives protection in case of an electrical fault; the heat units have been chosen to avoid overheating, but to prevent chance accidents the association has provided a second, slightly more expensive, model in which a thermostat is incorporated. Models of a third type can be plugged in series, the flex of one cage being connected to a plug on the cage alongside. In this way a single wall plug can be used for several cages up to the limit of its capacity. The current consumption of a single cage is only 10 watts, so that a 5 amp. socket is adequate for 10 cages and a 15 amp. socket for 30 cages.

Letters to the Editor

COMPULSORY IMMUNISATION

SIR,—As the people of this country have willingly submitted to compulsory military service, compulsory rationing, compulsory billeting, &c., I think they would also be amenable to compulsory active immunisation against disease when particular danger exists, as at the present time. As accommodation for infectious disease is limited and may become more so, I think it is essential that existing beds should be used to the best advantage. It would appear most undesirable, to put it mildly, to use a proportion of these beds for diseases which by their very nature must be treated under medical and nursing supervision in hospital, but which can so easily and effectively be prevented by measures of active immunisation at our disposal. Facilities for the prevention of certain diseases such as diphtheria and smallpox on a voluntary basis have existed for some time, but the results to date have not been completely satisfactory and have been directly proportionate to the particular initiative and energy of the medical personnel of each public health authority.

I would suggest, therefore, that the following extra *compulsory* safeguards to public health be promoted :—

(1) Immunisation against diphtheria of all healthy school children. Whooping-cough vaccine could with advantage be given at the same time to all those who have not yet suffered from this disease.

(2) Vaccination against smallpox.

(3) Immunisation against the typhoid group of fevers for the population of heavily bombed areas. Where the sewerage system is persistently damaged there is a real danger of pollution of water-supplies and even where the water of peripheral mains contains a proportion of chlorine this is not sufficient to safeguard the health of the community. The danger from the sewers lies not only in the pipes which are fractured by the direct impact of the bombs, but also from the possibility of smaller defects which may go undetected at a considerable distance away. Many of the public, on their own initiative, have taken to boiling their water, but facilities for T.A.B. inoculations have so far only been sponsored by very few authorities.

(4) Immunisation against tetanus, for members of defence forces and civilians exposed to the risk of recurrent injury.

While the necessary legislation is being enacted I would suggest that widespread publication in the lay press be started to warn the general public of the real dangers to health consequent to aerial attack in war, to state how difficult it will be to afford the peace-time facilities for treatment of infectious disease, to advise them of the ease with which certain infectious diseases can be prevented, to emphasise the lack of danger to life or of serious inconvenience from the injection materials now used, and to promise that in the near future widespread facilities to suit the convenience of all sections of the community will be forthcoming. The present full-time medical and nursing staffs of public-health authorities and the Emergency Medical Service could be easily supplemented by the enlistment of local general practitioners in each area.

The cost of a widespread scheme of active immunisation such as the one visualised would be comparatively small, particularly so if all those people who can afford to pay were asked to do so.

Edgware, Middlesex. A. A. CUNNINGHAM.

TREATMENT OF TONSILLITIS WITH BISMUTH

SIR,—The treatment of tonsillitis with bismuth intramuscularly has been used for some time in this hospital but the method appears to be little known. It was first introduced by Monteiro in 1933 using a liposoluble preparation, and later was followed by De Mello. Stiehr and Gipperich have also published results with this drug but no reference has been found to it in this country. During the recent epidemic of sore throat opportunity has been taken of again trying out this form of treatment but with a new bismuth preparation.

Twelve cases were admitted to hospital and eleven others were treated as outpatients. Of the twelve admissions four were cases of Vincent's angina, the remainder were cases of follicular and simple tonsillitis with a mixed flora present; among the eleven outpatients there were no cases of Vincent's infection. The symptoms were those commonly associated with the condition. The treatment in each case consisted of a single intramuscular injection of 2 c.cm, of a solution containing 0·12 g. of sodium iodobismuthite and 0·24 g. of sodium iodide (put up in ampoules for me by Messrs. Allen and Hanburys). The injection is painless, is always well supported and is followed by no ill effects. Among the twelve cases under care in hospital the temperature fell to normal within 24 hours in ten cases; in the other two cases in 28 and 36 hours. All those treated as outpatients were seen the day after the injection and all had lost their fever. Pain on swallowing, often a very distressing symptom, was relieved in the cases of Vincent's infection in from 16 to 24 hours, in the other cases in from 7 to 10 hours. Redness and swelling of the fauces subsided, with clearing of the exudate, within 12 hours, gland swelling subsided 18 hours later with rapid improvement in the general condition. In no case was there albuminuria. No local or other treatment was given in these cases.

The particular formula has been adopted because the addition of sodium iodide renders the preparation more stable and prevents hydrolysis. The bismuth is negatively charged, which ensures rapid absorption and penetration of the tissues, especially lymphatic tissues such as the tonsils, while toxic effects are obviated by rapid elimination.

This method of treatment by a single intramuscular injection should prove of considerable value in dealing with epidemic "shelter sore throat."

French Hospital, London. S. GALEWSKI.

ESTIMATION OF BLOOD-VOLUME IN PLASMA TRANSFUSION

SIR,—In their paper of Nov. 2 Bushby, Kekwick and Whitby state that the blood-volume can be estimated by observing the falls in hæmatocrit, hæmoglobin or cell-count which follow plasma transfusions—a method used by Robertson and Bock during the last war (*Spec. Rep. Ser. med. Res. Coun., Lond.* 1919, No. 25, p. 226). The problem of transfusion after hæmorrhage is not, however, as it might have been, a simple mechanical one of emptying and filling. It is a much more complicated affair because hæmorrhage is noxious to the body and calls forth responses to an abnormal state. In advocating plasma transfusions in the treatment of hæmorrhage (*Brit. med. J.* June 29, 1940, p. 1047) I reported a series of cases in which plasma transfusion was accompanied by a rise in cell-count. I considered this rise to be due to numbers of red cells which had become sidetracked in muscle capillaries being swept back into the circulation by the raised blood-volume and blood-pressure caused by the transfusion. Whether or not this explanation is correct it is difficult to reconcile these clinical observations with the statements of your contributors.

Manchester. H. J. BRENNAN.

ASTHMA THROUGH THE BRONCHOSCOPE

SIR,—We are much interested in Major d'Abreu's description in your issue of Oct. 5 of an asthmatic attack seen through the bronchoscope. We follow the simple routine of giving the patient a Decicain tablet to suck 10 or 15 minutes before anæsthetisation of the throat by spray and brush. When the tablet is dissolved the throat is sprayed and the palate, fauces, tongue, teeth and lips are all painted with cocaine-adrenaline solution; the pyriform fossæ are also painted. It is now easy to visualise the cords with a laryngeal mirror, and to inject cocaine-adrenaline solution over them down the trachea.

Following the recommendation of Chevalier Jackson we have bronchoscoped nearly 100 patients suffering from chronic bronchitis and emphysema with asthmatic spasm, and have observed the tenacious mucous plugs to which d'Abreu refers. The appearance of the bronchial mucosa depends much upon the efficiency with which the anæsthetic solution has reached it. In our experience the outstanding feature in the quiescent stage is prominence of the longitudinal striæ in the floor of the trachea

and the bronchi; during the spasm, on expiration and particularly on coughing, it is a forward protrusion of the muscular posterior wall and mucosa so extreme as to leave no more than a "new moon" slit, even in the trachea. We agree that the carina appears shorter and wider, but this is probably due to turgidity and congestion rather than to actual shortening.

About a dozen of these patients have returned each winter for a repetition of treatment which did them good. In true asthma we are not prepared to say how much of the benefit is due to psychological effect.

E. H. HUDSON,
London Chest Hospital, E.2. H. M. MORLOCK.

INFANTS IN DAY NURSERIES

SIR,—I wish to endorse Professor Parsons's views in his letter of Oct. 12. It seems to me that Dr. Barrow and Dr. Brenner avoid the main issue in their criticism of his letter. There can surely be no doubt that if infants during the breast-feeding period are admitted to day nurseries breast-feeding will be discouraged, artificial feeding will be encouraged, and infection will spread amongst these babies of the same age-period if congregated together. If the Ministry of Health realise these dangers it is inconceivable that they have not given directions to the local authorities to prevent the admittance of these babies to day nurseries. Professor Parsons makes an excellent suggestion when he says, "It would, however, be interesting to know whether the dearth of skilled munition workers in any area is so great as to make the employment of mothers of infants under nine months of age essential, since this group can only represent a relatively small fraction of the total number of female workers." With regard to the question of anxiety in the mother interfering with the supply of breast milk referred to by Dr. Brenner, I have seen a large number of these cases after air-raids and in my experience after two days the supply returns again and the infant continues to be breast fed with no symptoms suggesting any alteration in the quality of the milk.

Kensington, W.8. RONALD CARTER.

AIR PURIFICATION BY HYPOCHLORITES

SIR,—A sentence in your leading article of Oct. 12 (p. 456) refers to the use of sodium hypochlorite for aerial disinfection in these terms: "The last of these is the cheapest, but it is unstable and highly corrosive to metal containers and has other disadvantages." And the authority cited for this statement is a report by Baker, Finn and Twort in the September issue of the *Journal of Hygiene* whose conclusion reads as follows: "That there are definite possibilities for the use of hypochlorite mists for combating aereal infections, but that the odour, irritant effects, opacity of the mists and corrosion of metals &c. will limit the sphere of utility." These opinions are based on work done with nebulisers using enormously stronger concentrations of germicide than those required in a properly designed atomiser. On their own statement they require a concentration of (weight to volume of air) 1 part in 1 million. The standard Milton Dynalysor requires a concentration of only 1 in 40–50 millions, and this concentration of 1% sodium hypochlorite contains no more than 1 in 5000 millions of the active germicide. Dr. Pulvertaft tested concentrations of 1 in 40, 20, and 10 millions and remarks: "These produced no visible mist and in each case a slight odour only, completely non-irritant, and, as a personal opinion, rather pleasant. In my opinion there is no possible menace to the health or convenience of anyone submitted to the mist in efficient concentration." During 1930–35 this system of air purification was tried in large-scale experiments on inhabited and furnished rooms without experiencing any of the objections raised by the authors.

As regards "irritation," a concentration of about 1 in 200 has long been employed by the general public for spraying the nose and respiratory passages. "Opacity of the mist" is caused by particles of evaporated salt which eventually fall to the floor. The authors employed a hypochlorite with a salt content more than 3 times that of the standard spray. "Corrosion of metals" is caused by the deposit of damp salt, as in the rusting of iron. With a dose of 1 in 40 millions for a room of 2000 cu. ft., 10 feet high, there would eventually be deposited 0·002 mg. of salt on each sq. in. of floor space. This is probably considerably less than could be found at any time in any ordinary dining-room carpet! The authors raise another "contingency for serious consideration" in "the bleaching and rotting effects of free chlorine." They seem to be unaware that hypochlorites contain no free chlorine and that this gas is not given off by hypochlorites unless decomposed by strong acids. Hypochlorite air-disinfection is based upon the liberation of hypochlorous acid which is essentially different in its characters from chlorine. It has little odour, no irritant properties, and its germicidal potency is immensely greater than that of chlorine. It is common knowledge that hypochlorite solutions can be rendered for all practical purposes completely stable.

My own opinion is that hypochlorites do not behave as aerosols when sprayed into the air; in other words, they do not kill by the action of small liquid drops, but by the setting free of hypochlorous acid gas which is absorbed by the moist bacteria. I am aware that this is controversial, but I have seen no evidence of any value for the aerosol theory so far as hypochlorites are concerned, and there is a great deal against it.

London, W.1. A. T. MASTERMAN.

SUBACUTE BACTERIAL ENDOCARDITIS

SIR,—Dr. Fletcher's account in your issue of Oct. 26 of a case of subacute bacterial endocarditis treated with sulphapyridine and heparin prompts me to draw attention to our experience of the method in this hospital. Four cases had been treated and two more were under treatment when the hospital was bombed. Of the four treated, one has remained well for six months, two died of intracranial hæmorrhage, and one of toxic jaundice. Positive blood-cultures were obtained before treatment in every case and in certain cases the organism's growth was tested against the drug in vitro. We experienced the same difficulties as Dr. Fletcher in the standardisation of heparin and can endorse his statements about the danger of intracranial hæmorrhage.

Guildford. C. P. PETCH,
Medical Registrar, St. Thomas's Hospital.

BLOOD SEDIMENTATION INDEX

SIR,—The experience narrated by Dr. Phillpotts is by no means uncommon. A blood sample set up in a sedimentation-tube after an hour or two's delay will sometimes reproduce exactly the behaviour of a sample of the same blood set up immediately after withdrawal from the vein—but not always. Here is a case in point where it did not:—

	1st hour reading.	Maximum velocity per 100 minutes.
No delay	26 mm.	68 mm.
Two hours' delay	35·5 mm.	68 mm.
Four hours' delay..	36 mm.	68 mm.

As he suggests, this may be due to cooling effects which obtained during the first sedimentation, and which were practically complete before the second and third (for the experiment was performed at a room temperature of 18° C.); or it may be due to agglutination taking place during the two hours' delay, so that the clumps of corpuscles, being fully formed from the start in the 2nd and 3rd sedimentations, achieve their maximum velocity earlier. Or, of course, it may be due to both factors. As I always found that slowly sedimenting bloods are less affected in their first-hour readings by delay than are the rapid ones—the sort that show 100 mm. and more in an hour—I have always assumed (perhaps wrongly) the second hypothesis to be true.

Dr. Phillpotts's summing up ("that one may safely keep a sample of blood up to 24 hours before measuring its sedimentation-rate and still have reasonable certainty of obtaining the correct result") is only saved from being really naughty by the conditional clause—"The temperature at which the rate is measured must *obviously* [my italics] be constant, however." I confess I have no experience of blood sedimentation experiments performed in a constant-temperature observation chamber.

I haven't got one; and there are comparatively few clinicians who have. The sedimentin index was devised to supply clinicians with a numerical assessment of disease processes, determinable by a non-laboratory process. Whatever temperature variation (within everyday limits) and delay (to an hour or two) may do to the first-hour reading, the maximum velocity, and hence the S.I., remains unaffected. That's my story, and I'm sticking to it.

Hartford, Cheshire. GEORGE DAY.

SPREAD OF PARADOXICAL METASTASES

SIR,—Your annotation on this subject clears up a case which has been puzzling me for some years. A lady of about 50 was admitted to hospital with pleural pain and dyspnœa of some standing, and on radiography she was found to have a large encysted empyema in the right pleural cavity. Operation was advised, and the patient readily agreed to this, though she stated quite calmly that she knew she would die. The empyema was opened and a large amount of cheesy material was scooped out; the wall of the cavity was firm and fibrous. She stood the operation well, but six hours later she collapsed suddenly and died. At autopsy numerous air-bubbles were found in the big meningeal venous sinuses. There were no air emboli elsewhere in the body, and apart from fibrous changes the lungs were normal. Surgeons, pathologists and physicians were alike unable to explain how air could have passed from the operation site through the arterial and capillary system to the venous sinuses. The experiments described in Dr. Batson's paper solve the mystery. Probably the fibrous capsule of the empyema prevented the pleural veins from collapsing. Air was sucked into these, passed into the azygos vein, thence to the rich anastomosis in the vertebral bodies, and finally up to the meningeal sinuses. Had we examined the vertebral bodies our difficulties might have been solved.

London. STEPHEN TAYLOR.

ADHERENT PERICARDIUM

SIR,—May I join forces with Dr. Poynton in disagreeing with Dr. Armstrong's statement that the constrictive type of adherent pericardium is never rheumatic. Neither can I agree that it is the "widely held clinical view that cardiac compression never follows a rheumatic pericarditis." Today more than ever the differentiation of rheumatic constrictive pericarditis from non-rheumatic constrictive pericarditis (so-called Pick's disease) is not merely of academic interest; the advisability of Delorme's pericardial resection depends on an appreciation of the fact that a heart with valves already ravaged by rheumatism will not be expected to respond in the truly astounding manner of a heart with normal valves and myocardium.

As long ago as 1882 Rosenbach, closely followed by Osler, described the characteristic features of rheumatic constrictive pericarditis, and several years ago Vaizey suggested [1] the term "Rosenbach-Osler syndrome" for these patients. Briefly, they differ clinically from the non-rheumatic patients in that valvular murmurs are present, the heart is enlarged, and the prognosis so much the poorer. Auricular fibrillation occurs in both types of lesion but is far commoner in the rheumatic case. Of the known causes of non-rheumatic constrictive pericarditis the commonest is tuberculosis, but it is still true that the causation of the majority of cases is unknown.

May I also suggest that the term "Pick's disease" be abandoned. Our own Chevers (of Guy's Hospital) described [2] two cases of this non-rheumatic constrictive pericarditis over half a century before Pick's paper appeared [3] in Germany.

Horton Emergency Hospital. S. ORAM.

WE regret that the signatures of our correspondents, Mr. Michael J. Smyth and Dr. S. C. Lewsen, were misspelled in our last issue.

1. Vaizey, J. M. Thesis for M.D. Cambridge.
2. Chevers, N. *Guy's Hosp. Rep.* 1842, **7**, 387.
3. Pick, F. *Z. klin. Med.* 1896, **29**, 385.

BILATERAL EXOPHTHALMIC OPHTHALMOPLEGIA

SIR,—Dr. H. G. McGregor in his article on exophthalmic ophthamoplegia in your last issue mentions the possibility that the second eye may become affected some time after the other. I have just seen my first example of this rare but important development in a series of between 30 and 40 cases. In 1935 a man, then aged 43, developed exophthalmic ophthalmoplegia in the right eye. As he also showed symptoms of thyrotoxicosis partial thyroidectomy was performed; the operation cured these symptoms but left his eye unchanged. Five years later exophthalmos and ophthalmoplegia have appeared in the left eye, which is now worse than the right one. The thyrotoxic symptoms, however, have not recurred.

Harley Street, W.1. W. RUSSELL BRAIN.

*** The correct reference to Dr. Russell Brain's paper quoted by Dr. MacGregor is *Quart. J. Med.* 1938, **31**, 293. —ED. L.

Obituary

WALTER GEORGE SPENCER

O.B.E., M.S. Lond., F.R.C.S.

Mr. W. G. Spencer, vice-president and historian of the Westminster Hospital, who died on Oct. 29 at the age of 83, came of Wiltshire yeoman stock of which his speech berayed him. Son of Walter Spencer of Little Chalfield he was educated at Weymouth College and entered St. Bartholomew's Hospital where he held several scholarships and in 1886 graduated M.B. with third place on the honours list. He became house-surgeon to H. T. Butlin with whose book, "Diseases of the Tongue," his name was later to be associated. After postgraduate work at Berlin and Halle he returned to London to work at the Brown Institute under Victor Horsley on problems of respiration and circulation. He obtained his higher surgical qualifications in 1887 and two years later he was awarded the Jacksonian prize for an essay on intracranial abscess and tumours. Meanwhile a vacancy at the Westminster Hospital gave him an early start on his life's work. Of his work there S. C. writes: "Spencer's surgical courage was exemplified in his undertaking operations of the greatest magnitude. Even 25 years ago intracranial tumours, gastrectomies and hind-quarter amputations were not infrequently seen in his wards. He cared little for the refinements of technique, he operated garbed in a mackintosh apron rubbed down with 1 in 20 carbolic, he scrubbed his hands thoroughly and never wore gloves except for his own protection in septic cases. He was a swift operator and never wasted time: speed combined with clinical acumen and an accurate knowledge of anatomy made him a surgeon of great ability—daring and yet safe." In the medical school he lectured on physiology and later on clinical surgery, and although he lacked clarity of exposition he always had a great following as a teacher, for his knowledge was encyclopædic and his approach to a case direct. At the bedside he built up for the student a complete clinico-anatomical picture. He examined for the College of Surgeons and the Universities of London and Manchester. In the board room his fearlessness often led him to be in an undismayed minority of one, but his ability as an administrator was recognised when he became chairman of the hospital house committee. Westminster Hospital was his chief concern but not his only interest. In 1915 he was elected to the council of the Royal College of

Surgeons and twice he served as vice-president. In 1896 and 1897 he was Erasmus Wilson lecturer, in 1920 he gave three Hunterian lectures, in 1922 the Vicary lecture and in 1923 the Bradshaw lecture. In 1929 he was elected to the senate of the University of London where he was a firm supporter of the external side of the university and a champion of equal opportunity in medical teaching for women.

His thirst for knowledge was never satisfied. New methods of treatment always appealed to him and on his retirement from the active staff of the Westminster in 1923 he followed the development of radium therapy and when at the end of six years he was impressed by its value he brought out a third edition of "Diseases of the Tongue" incorporating more modern methods. Again, late in life he took up chess and became a proficient player and in the last decade of his life he mastered enough Latin to enable him to carry out his admirable translation of Celsus for the Loeb library, the only version by a modern surgeon for the use of surgeons. At the London Library under Sir Hagberg Wright and at the College of Surgeons he helped to prepare the vast mass of material which afterwards appeared as Plarr's Lives of the Fellows. He was also active as an honorary librarian of the Royal Society of Medicine. His history of the Westminster Hospital which appeared in 1934 remains as a monument of his industry. The picture of a many-sided personality is completed by the words of another friend: "Spencer was a great walker and talker, in which capacities I knew him best. For many years we were companions on Sunday walks covering 15 or 20 miles, where his knowledge of footpaths and byways made them a delight. In his professional relations he was a generous friend to younger men."

Mr. Spencer married Elizabeth Chorlton, a sister at St. Bartholomew's Hospital. His only son survives him, his daughter died soon after qualification.

LEONARD BUCKLEY

M.B. LPOOL; MAJOR, R.A.M.C.

LAST month Major Leonard Buckley was killed by enemy action while in command of a military hospital near London. He was born at Crosby in 1886, the youngest son of William Buckley, J.P., of Blundellsands. He studied medicine at Liverpool University where he qualified in 1910, and after holding resident posts at Liverpool Royal Infirmary he joined the R.A.M.C. in 1911. During the last war he served in France and was promoted captain in 1915. In 1921 he retired from the army and joined a partnership at Wincanton, Somerset. He was on the reserve of officers and when war broke out he was called up and appointed acting major. Last September he was awarded a brevet majority.

He married a granddaughter of Jacques Offenbach, who died on Nov. 7. Three sons survive them. One of his partners writes: Dr. Buckley was always a cheerful and willing worker, ready to help us in any difficulty at any time of the day or night. He was very popular with his patients, especially among the poor. The death of his only daughter while still a child, after a long and trying illness, was followed by a severe operation on himself which undermined his usual robust health, but he carried on his practice with his old energy and success. He was a good lawn-tennis player, and for many years was captain of the East Somerset golf club.

WILLIAM ROBINSON

M.D., HON. D.CH. DURH., F.R.C.S.

Dr. William Robinson died on Oct. 9 at the age of 81 at Stanhope, his birthplace. He spent his schooldays there and at Newcastle, and after qualifying from the old College of Medicine he returned in 1881 to Stanhope and joined Dr. Charles Arnison in his country practice. Robinson knew the countryside and the hard life the dalesfolk led. On his long rides he had time for thought and his thoughts were practical and compassionate. Goitre was endemic in the outlying parts of the dale, and this was the subject on which he wrote his thesis in 1884. Lead-mining was the principle industry and two-thirds of the miners had tuberculosis. Dr. Robinson founded the society for the prevention and cure of consumption in co. Durham. He became an advocate of sanatorium treatment and with the help of his new society sanatoriums were opened at Stanhope and Wolsingham. In 1893 he addressed the public-health section of the B.M.A. on lead-miners and their diseases. He persuaded the friendly societies to set up a convalescent home at Grange-over-Sands. Yet in the midst of these wise activities he found time to take the F.R.C.S., no mean feat for a general practitioner in an isolated northern country town, and two years later in 1894 he joined Mr. Edwin Maling in practice at Sunderland. Mr. Maling was associated with the Eye Infirmary there which his father had founded and soon Dr. Robinson also joined the staff. His interest in industrial diseases continued and in 1907 he contributed the first paper on bottle finishers' cataract to the *British Medical Journal*. He was also appointed to the honorary staff of the Sunderland General Infirmary where, though he was nominally physician, he did most of the operating, and during the last war he was in charge of the surgical department of the Sunderland War Hospital with the rank of major. His interest in social conditions ensured him a place on the magistrates' bench and for some time he was chairman of the juvenile court of the district. He was awarded the honorary degree of D.Ch. at the centenary celebrations of the College of Medicine of Durham University. His three sons became doctors and for many years Dr. Robinson was in partnership with his son Dr. Geoffrey Robinson. As he grew older he undertook less medical work and some of his leisure was spent in writing his reminiscences, "Sidelights on the Life of a Wearside Surgeon," which appeared last year and which was a record of quiet and solid endeavour enlivened with anecdotes about the infinite variety of his colleagues and patients.

FACTORY WELFARE WORK

Mr. ERNEST BEVIN told a meeting of members of the House of Commons, over which Sir Francis Fremantle presided, of his plans for the welfare of our workers. With the colossal development of war industries it was no longer possible to rely on voluntary efforts for the organisation of welfare work in our factories and a welfare order applying to works or groups of works employing upwards of 250 persons had been issued. An adequate supply of trained welfare officers had already been assured by payment of fees for the attendance of selected candidates at courses arranged by the universities, and special courses had been arranged for industrial nurses. He believed that these officers, picked for their personality and experience, would be regarded as ranking equally in importance with the members of the factory staff responsible for production. Hitherto A.R.P. services and the Home Guard had been provided for the protection of the workers, but too often nothing had been done to promote their morale, comfort and welfare. These would now become the responsibility of the welfare officers.

The appointment of doctors experienced in problems of fatigue and psychology was another feature of his scheme, and a special course of instruction in industrial hygiene would be provided at the London School of Hygiene. The factory doctor was now recognised as essential to works management, to supervise the health of the workers, to ensure prompt treatment of injuries, and to coöperate with the general practitioner and the hospital to secure early restoration of the patient to industrial efficiency. Mr. Bevin hopes to keep factory welfare work distinct from local welfare activities. When a man has finished his day's work he likes to be independent and free of the discipline necessarily connected with his employment. Other welfare officers will therefore be appointed to encourage local organisations who provide means of recreation, relaxation and amusement outside the factories. They will also assist in arranging for the suitable billeting of imported workers, and for transport facilities to reduce fatigue and discomfort of those whose homes were distant from the factory.

Mr. Bevin gave an encouraging account of the measures to be taken for safeguarding the health of the workers during the coming winter, and of the experience gained in reducing industrial fatigue by the rational limitation of working hours which had been found to ensure the maximum output.

Medical News

University of Oxford

Sir Arthur Hurst has been appointed lecturer in clinical medicine for two years, Prof. G. E. Glask lecturer in clinical surgery for two years, and Dr. C. L. Cope as Nuffield lecturer in clinical medicine for five years while holding the office of first assistant to the Nuffield professor of clinical medicine.

The following examiners have also been appointed :—

Organic chemistry, Mr. D. LL. Hammick; human anatomy, Dr. P. N. B. Odgers; human physiology, Prof. R. A. Peters, F.R.S.; pharmacology and therapeutics, Prof. J. H. Burn; pathology, Dr. A. D. Gardner; forensic medicine and public health, Dr. A. H. T. Robb-Smith; medicine, Dr. G. E. Beaumont; surgery, Mr. E. A. Crook; and midwifery, Mr. Victor Lack.

Royal College of Surgeons of England

Dr. A. J. E. Cave will give demonstrations of museum specimens on Nov. 18, 20 and 22. On Nov. 27 Sir Alfred Webb-Johnson will give the Bradshaw lecture, and the title of his discourse will be Pride and Prejudice in the Treatment of Cancer. On Dec. 5th Mr. T. P. McMurray will deliver the Robert Jones lecture and he will speak on the semilunar cartilages. All these lectures and demonstrations will be held at 2.30 P.M. at 1, Wimpole Street, London, W.1.

Royal College of Physicians of Edinburgh

At a meeting of the college held on Nov. 5, with Dr. Alexander Goodall, the president, in the chair, Dr. Thomas Anderson (Glasgow) was introduced and took his seat as a fellow.

Dr. J. C. R Buchanan, Dr. J. H. Ewen and Dr. J. C. Caird were elected to the fellowship.

University of Manchester

Dr. J. C. Crighton Bramwell has been appointed professor of systematic medicine in the university and Dr. T. H. Oliver professor of clinical medicine.

Dr. Bramwell was born in Edinburgh, the son of Dr. Byrom Bramwell, and educated at Cheltenham College and Trinity College, Cambridge, where he obtained a first class in the natural sciences tripos. He qualified in medicine from the University of Manchester in 1915 and saw service with the R.A.M.C. in Egypt, France and Italy. After the war he returned to Manchester where he was appointed medical registrar at the Royal Infirmary and cardiologist to the Ministry of Pensions. During 1923–24 he held a Rockefeller scholarship under the M.R.C. and undertook research in diseases of the cardiovascular system at Washington University. Dr. Bramwell is physician to the Royal Infirmary at Manchester and consulting physician for women to St. Mary's Hospitals. He examines in medicine for the Universities of Cambridge and Aberdeen. In 1929 he was elected F.R.C.P. and in 1937 he delivered the Lumleian lectures on the arterial pulse in health and disease. He has also published papers on heart disease and pregnancy and is the author of Heart Disease, the Principles of Diagnosis and Treatment.

Dr. Oliver was also educated at the Universities of Manchester and Cambridge. After obtaining first-class honours in the natural sciences tripos in 1909 he graduated M.B. with honours from the University of Manchester in 1912. He held resident appointments at the Manchester Royal Infirmary and served as a major in the R.A.M.C. during the last war. Later he was appointed assistant director of the clinical laboratories at the infirmary, and was appointed to the honorary staff as physician. He holds the post of lecturer in systematic medicine in the University of Manchester and is examiner in therapeutics for the University of Cambridge. He is also tropical specialist on the Pensions Appeal Board. He has written on diabetes mellitus, achlorhydria and the glycosurias. He was elected F.R.C.P. in 1931.

Royal College of Obstetricians and Gynæcologists

The following have satisfied the examiners for the D.R.C.O.G. :—

H. I. C. Balfour, H. V. Corbett, Henry Doberman, Ruth Edmonds, J. B. Farquhar, M. L. Gaudin, Clement Grimshaw, Doreen M. Martin, Mary C. J. McCann, A. F. Pearson, H. P. Swan and R. H. White-Jones.

LOCK-UP SHELTERS.—Stoke Newington is experimenting with family air-raid shelters which will meet one of the more serious objections to communal shelters—their lack of privacy. The street shelter which was demonstrated a few days ago is divided into compartments 10 ft. by 4 ft. 6 in. which will each hold four adults and three children. Bunks are provided and there is room for a table, wireless set and apparatus for making tea. The idea is to allot the compartments to families who live nearby and to give them a key so that there will be no gate-crashers. The lock-ups are primarily intended for people whose houses have no garden or yard large enough to take an Anderson shelter.

Service Casualties

Temp. Surgeon Lieutenant S. P. H. Fergus, M.B. Leeds, H.M.S. *Venetia*, is reported to be missing presumed killed. The following R.A.M.C. officers are reported to be prisoners of war:—

W.S./Captain G. F. A. Caldwell, M.B. Glasg.; A./Major J. A. Chapel, M.D. Edin.; Lieutenant G. I. Davidson, M.B. Aberd.; Captain W. M. Davidson; Lieutenant W. W. Deane, M.R.C.S.; A./Major G. M. R. Duffus, M.B. Aberd.; Major W. R. Henderson, F.R.C.S.; Lieutenant G. S. A. Knowles, M.B. Lond; Lieutenant D. J. Macrae, M.B. St. And.; Lieutenant B. N. Mazumdar, M.R.C.S.; Lieutenant N. E. O'Neill, M.B. Sydney; Lieutenant Robert Pollock, M.B. Dubl.; Colonel W. A. Robertson, M.D. Edin.; Lieutenant I. F. Rose, M.B. Oxfd; Lieut.-Colonel T. A. S. Samuel, M.R.C.S.; Lieutenant Deryck Taverner, M.B. Leeds; and Lieutenant J. E. Woodling, M.R.C.S.

Mildmay Hospital, London

On Oct. 3 Mr. W. S. Pennefather opened ten new private wards at this hospital. At the outbreak of the war owing to the demand for trained women the Mildmay nurses who worked in the district were all called up except one, and it is the block in which they used to live that has been converted to make the new private wards.

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow the following were elected office-bearers for the ensuing year :—

President, Mr. Roy F. Young; visitor, Mr. James H. MacDonald; hon. treasurer, Mr. William J. Richard; hon. librarian, Dr. W. R. Snodgrass; other councillors: Mr. J. Douglas Brownlie, Mr. J. Scouler Buchanan, Mr. Donald Duff, Dr. John Gardner, Dr. Stanley G. Graham, Dr. John Henderson, Dr. A. Brown Kelly, Mr. J. A. C. Macewen, Dr. Noah Morris, and Mr. William A. Sewell.

The Fellowship of Medicine will hold an M.R.C.P. course in chest diseases at the Brompton Hospital, on Mondays and Thursdays at 3.30 p.m. from Nov. 28 to Dec. 20. The course will be limited to six graduates. A course of afternoon demonstrations in neurology for M.R.C.P. candidates, and in orthopædics for F.R.C.S. candidates, will be arranged shortly. Further information may be had from the secretary of the fellowship, 1, Wimpole Street, W.1.

THE LANCET 1938–40.—Is any subscriber willing to part with these five bound volumes or a complete set of the issues unbound to form the nucleus of an E.M.S. hospital library ?

Appointments

BACON, L. J., B.Chir. Camb., D.P.H.: temp. asst. M.O.H. for Birmingham.

DIXON, PHYLLIS, M.B. Lond.: asst. welfare M.O. for Co. Durham.

GODFREY, N. G., M.B. Sydney, F.R.C.S.: R.S.O. at Stockport Infirmary.

MACFARLANE, R. G., M.D. Lond.: temp. asst. clinical pathologist at the Radcliffe Infirmary, Oxford.

MASTERTON, MARY, M.B. Edin.: asst. welfare M.O. for Co. Durham.

MUIR, A. J., M.B. Glasg., D.P.H., B.Hy. Durh.: M.O.H. and School M.O. for Todmorden.

ORMSTON, R. M. A., L.R.C.P.E., D.P.M.: asst. school M.O.H. for Burnley.

Births, Marriages and Deaths

BIRTHS

BLISS.—On Nov. 8, at Tavistock, the wife of Captain C. H. Bliss, I.M.S.—a son.

BUTCHER.—On Nov. 6, at Lincoln, the wife of Dr. H. G. H. Butcher—a son.

FRANKLIN.—On Oct. 27, the wife of Dr. Hugh Franklin, of Deddington, Oxon—a son.

HUGO.—On Nov. 11, at Guildford, the wife of Dr. Richard Hugo—a daughter.

KILPATRICK.—On Nov. 7 at Gerrards Cross, the wife of Mr. Frank Kilpatrick, F.R.C.S.—son.

MANSELL.—On Oct. 29, at South Mitford, Yorks, the wife of Dr. H. E. Mansell—a daughter.

WOLSTENHOLME.—On Nov. 5, at Sheffield, the wife of Lieutenant G. E. W. Wolstenholme, R.A.M.C.—a daughter.

MARRIAGES

BEHRMAN—ENGELBERT.—On Nov. 7, Simon Behrman, M.R.C.P., of London to Doris Engelbert.

DEATHS

COLGATE.—On Nov. 7, Henry Colgate, M.D. Lond., F.R.C.S., of Eastbourne, aged 89.

KIRK.—On Nov. 10, at Belfast, Thomas Sinclair Kirk, M.B. R.U.I.

MCCORMICK.—In November, by enemy action, George Franklin Hurley McCormick, M.R.C.S., L.D.S., of London, aged 40, and his wife.

MANSELL MOULLIN.—On Nov. 10, in London, Charles W. Mansell Moullin, C.B.E., D.M. Oxfd, F.R.C.S., Colonel R.A.M.C. (T.), aged 89.

TREADWELL.—On Nov. 7, at Woking, Oliver Ferreira Naylor Treadwell, M.R.C.S., L.S.A., aged 80.